alberta's species at risk program

MULTISAR

A Multi-Species Conservation Strategy for Species at Risk in the Grassland Natural Region of Alberta

2010-2011 Report

MULTISAR

Alberta Species at Risk Report No. 141

Alberta Conservation Association

Conserving Alberta's Wild Side

PRAIRIE CONSERVATION FORUM

Government of Alberta

MULTISAR: A Multi-Species Conservation Strategy for Species at Risk in the Grassland Natural Region of Alberta

2010-2011 Report

Kristen S. Rumbolt, François Blouin, Brad A. Downey, Brandy L. Downey, Carla A. Koenig, Darryl J. Jarina, Paul F. Jones, Julie P. Landry-DeBoer, and Emily R. Wesley

Alberta Species at Risk Report No. 141

March 2011

Government of Alberta

Alberta Conservation Association

Conserving Alberta's Wild Side

PRAIRIE CONSERVATION FORUM

Publication No. I/502
ISBN No. 978-0-7785-9367-6 (Printed Edition)
ISBN No. 978-0-7785-9368-3 (On-line Edition
ISSN No. 1469-7219 (Printed Edition)
ISSN No. 1496-7146 (On-line Edition)

For copies of this report, contact:

Information Centre - Publications
Alberta Environment/Alberta Sustainable Resource Development
Main Floor, Great West Life Building
9920-108 Street
Edmonton, Alberta, Canada T5K 2M4
Telephone: (780) 422-2079

OR

Visit our web site at:
http://www.srd.gov.ab.ca/fw/speciesatrisk/

OR

Visit the MULTISAR website at:
www.multisar.ca

Suggested citation formats:

Entire report

Rumbolt, K.S., F. Blouin, B. A. Downey, B. L. Downey, C. A. Koenig, D. J. Jarina, P. F. Jones, J. P. Landry-DeBoer, and E. R. Wesley. 2011. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2010-2011 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 141, Edmonton, AB. 84 pp.

Chapter of report

Wesley, E. R., J. P. Landry-DeBoer and B. A. Downey. 2011. Habitat Conservation Stategies, pages 9-24 *In* Rumbolt, K. S., F. Blouin, B. A. Downey, B. L. Downey, C. A. Koenig, D. J. Jarina, P. F. Jones, J. P. Landry-DeBoer, and E. R. Wesley. 2011. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2010-2011 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 141, Edmonton, AB.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACKNOWLEDGEMENTS

MULTISAR is a collaborative effort of non-government organizations, government agencies, cooperating landowners and land managers, numerous funders and participants. Its success lies in the grassroots cooperative approach respected by all partners. This project is only possible because of the stewardship values and efforts of our landowner and land manager cooperators. They have committed valuable time to learn about the MULTISAR process, support our field work and contribute to the development and implementation of conservation plans, assisting in the maintenance and improvement of Alberta's natural rangelands and their wildlife inhabitants.

The MULTISAR Management Advisory Committee (MAC), composed of Terry Clayton, David DePape, Brandy Downey, Dale Eslinger, Joel Nicholson, and Richard Quinlan (Alberta Sustainable Resource Development - Fish and Wildlife Division - ASRD-F&W), Barry Cole and Kevin France (ASRD-Lands), Lance Engley and Paul Jones (Alberta Conservation Association - ACA) and François Blouin (Prairie Conservation Forum - PCF), provided direction to the project. The MULTISAR Steering Committee; Brad Downey and Paul Jones (ACA), Jennifer Richman (ASRD-Lands), Brandy Downey and Joel Nicholson (ASRD-F&W) and François Blouin (PCF), planned, managed and coordinated the project. Sasha Harriott (PCF) was instrumental in the administration of the ASRD grant in support of MULTISAR.

In addition to the members of the Steering Committee (above), Kristine Dahl, Julie Landry-DeBoer, Sophie LaRoque and Lee Moltzahn (ACA), Darryl Jarina, Emily Pollak and Kristen Rumbolt (PCF) made up the MULTISAR Team. Further range inventories were completed by Carla Koenig and riparian health assessments were conducted by Cows and Fish (contract). Special thanks to Jennifer Carpenter and Adam Moltzahn (ACA), Grant Chapman, Léo Dubé, Kim Morton and Andrew Sommerville (ASRD-F&W) who assisted with wildlife surveys and to Adopt-A-Plant volunteers, Nora Manners, Kathryn Podgurny and Elizabeth Podgurny, who surveyed a western blue flag site. Members of the Alberta Fish & Game Association (AFGA) volunteered several hours in improving fences for wildlife crossing. AFGA (Operation Grassland Community) also collaborated in the development and delivery of Species at Risk Conservation Plans. Additional support and recommendations to conservation plans were provided by Jody Best, Darrin Britton, Simon Brookes, Lynn Fitzpatrick, Felix Gebbink and Terry Hood (SRD), Brad Taylor (ACA), Dana Blouin and Rob Gardner (Nature Conservancy of Canada -NCC) and Tim Romanow (Cardston County).

We are grateful to Barry Adams, Ron Bjorge, Murray Busch, David DePape, Rick Blackwood, Richard Quinlan, Doug Manzer and Lance Engley, for their commitment to MULTISAR and to its continued funding.

The 2010-2011 project year was made possible by the generosity and the foresight of our funders: Alberta Sustainable Resource Development through a grant to the Prairie Conservation Forum, the Government of Canada Habitat Stewardship Program for

Species at Risk, AltaLink, Canadian Natural Resources Ltd., Alberta Conservation Association and the Summer Temporary Employment Program. Additional support and administration was provided by Alberta Conservation Association, Alberta Sustainable Resource Development - Fish and Wildlife and Lands Divisions, and the Prairie Conservation Forum.

EXECUTIVE SUMMARY

2010-2011 was another successful year for the MULTISAR project. Despite a cool and moist spring and wet summer delaying field work, most of the activities planned for the year under the three programs of the current MULTISAR business plan were completed.

The Habitat Conservation Program includes the development of detailed Habitat Conservation Strategies (HCS) in the core project area of southern Alberta, as well as the more compact Species at Risk Conservation Plans (SARC Plans) delivered throughout the Grassland Natural Region. In 2010-2011, new HCSs were developed on five ranches totaling approximately 4,700 acres. Associated habitat enhancement projects were also developed to improve the habitat of key wildlife species. Twelve habitat projects were developed on HCS properties. These varied from weed control, native prairie restoration, water development, wildlife-friendly fencing, shrub planting and tree protection. In addition, SARC Plans and their associated beneficial management recommendations for wildlife habitats were developed on 22 private ranches totaling approximately 53,105 acres.

The Education, Outreach and Awareness program was greatly scaled back this year due to reduced resources. However, MULTISAR staff were able to give presentations to landowners, wildlife and conservation groups, college students and the general public, in addition to participating in two grassland awareness endeavors in collaboration with other conservation groups. MULTISAR staff also presented at a national workshop and presented a poster at a national conference. Communication materials, including one issue of MULTISAR's newsletter and a fact sheet update were developed. In total, MULTISAR made over 415 different contacts with more than 1200 people including landholders, the general public, academia, industry, media, government and non-government organizations and other sectors.

Under the Research and Monitoring Program, MULTISAR began implementing its new monitoring and evaluation protocol to assess the directionality of habitat improvements and management changes and the effectiveness of its habitat conservation strategies. Twenty seven habitat improvement projects were re-visited and assessed during the summer. In addition, a follow-up questionnaire was developed to monitor the adoption of beneficial management practices for key wildlife species and changes in perceptions toward species at risk two years after the development of Species at Risk Conservation Plans.

As MULTISAR grows through time, so does the amount of data and information that has been collected since its inception in 2002. Efforts began in 2010-2011 to centralize all data in a secure repository location that could be readily accessed by MULTISAR project staff from the three partnering organizations. In addition, new standards were initiated to facilitate data management and integrity. These projects will continue in the next project year.

1.0 INTRODUCTION

François Blouin, Prairie Conservation Forum, Lethbridge, Alberta

Despite its 9,694,650 ha, less than 32% of Alberta's Grassland Natural Region remains in a relatively natural state (Resource Data Branch 1995). Much of it has been converted to farmland, industrial land, urban and suburban areas and to transportation corridors. What remains, sustains more than 75% of Alberta's species at risk and is facing an increasing amount of human development and complex land uses. Attempting to maintain or return multiple prairie wild species to sustainable population levels over such a large region presents a formidable challenge to fish, wildlife and rangeland managers. A multiple species approach becomes more effective.

The concept of developing a process to address the conservation of multiple species at a landscape level was introduced in Alberta in 2002. The idea came from the Federal Prairie and Northern Region Habitat Stewardship Committee responsible for allocating the Government of Canada's Habitat Stewardship Program for Species at Risk. With a significant density of species at risk and the availability of large tracts of relatively intact natural grasslands remaining, the committee suggested that the Milk River Basin presented an opportunity for development of a multi-species approach to conserving species at risk. In 2003, the name "MULTISAR" was adopted as it captures all aspects of the project: multiple organizations working together to conserve multiple species at risk. This interdepartmental and interagency cooperation continues to be key to the implementation of the MULTISAR process, and facilitates conservation of multiple species across the landscape.

The MULTISAR conservation project is a cooperative habitat stewardship initiative between landholders, the Alberta Conservation Association (ACA), Alberta Sustainable Resource Development-Fish and Wildlife (ASRD-F&W), Sustainable Resource Development- Lands (ASRD-Lands), and the Prairie Conservation Forum (PCF). It is recognized under the 2009-2014 Alberta Strategy for the Management of Species at Risk (Fish and Wildlife Division 2008) as an efficient means to implement recovery and management actions for species at risk in the Grassland Natural Region.

The MULTISAR project is guided by the 2009-2014 Business Plan. The mission, vision and goals are:

Vision: Multiple species of wildlife, including species at risk, are effectively conserved at the landscape level, through a process that integrates landuse[1] management with fish and wildlife management principles, and in a manner that may contribute to the species and habitat recovery and to the sustainability of the rural economy.

[1] Landuse management refers to both range management principals and management of the various land uses (including industrial developments) on the landscape.

Mission: To develop and implement the MULTISAR process which directs conservation of multiple species at risk, associated fish and wildlife and their habitats, within the Grassland Natural Region of Alberta.

Goal: To assist landowners and lessees to manage land to benefit provincial and federal species at risk, while maintaining an economically viable operation.

MULTISAR consists of three primary components; 1) an Education, Outreach and Awareness Program providing stewardship tools (fact sheets on Beneficial Management Practices (BMP) and guides to living with species at risk), information brochures, school education program, 2) a Habitat Conservation Program with detailed Habitat Conservation Strategies developed in high priority species at risk areas, and the more condensed Species At Risk Conservation Plans delivered in the entire Grassland Natural Region, and 3) a Research, Monitoring and Evaluation Program where project data are collected, analyzed, and interpreted to assess the success of the three program areas and of the MULTISAR project at achieving their objectives. The following chapters outline the accomplishments for MULTISAR under these three project components for the fiscal year 2010-2011.

1.1 Literature Cited

Fish and Wildlife Division. 2008. Alberta's Strategy for the Management of Species at Risk (2009-2014). Alberta Sustainable Resource Development, Fish and Wildlife Division, Edmonton, AB. 30 pp.

Resource Data Branch. 1995. Native Prairie Vegetation Inventory (Grassland Natural Region). Alberta Sustainable Resource Development.

2.0 EDUCATION, OUTREACH AND AWARENESS

Francois Blouin, Prairie Conservation Forum, Lethbridge, Alberta

Brandy Downey, Alberta Sustainable Resource Development, Fish and Wildlife Division, Lethbridge, Alberta

2.1 Introduction

The MULTISAR Education, Outreach and Awareness component was significantly scaled back in 2010-2011. A decrease in funding to MULTISAR led to the loss of the dedicated Education, Outreach and Awareness Coordinator. This loss, led the MULTISAR team to re-examine this component to ensure that the areas of highest priority were maintained at the high level of professionalism that MULTISAR is known for. This change has led to MULTISAR focusing on a reduced outreach and awareness segment of the program with rural landholders, while working with other organizations to continue some aspects of youth education.

Partnerships are the cornerstone of MULTISAR's Education, Outreach and Awareness Program. Involvement with the Prairie Conservation Forum (PCF), Oldman Watershed Council (OWC), Milk River Watershed Council Canada (MRWCC) and collaboration with groups such as Adopt-a-Plant Alberta (APA), the Alberta Fish & Game Association (AFGA) and the Nature Conservancy of Canada (NCC) has increased MUTISAR's capacity to work on projects. Sharing resources has not only increased efficiency but also allowed innovative ideas, such as the PCF Prairie Education program and the MRWCC Community Stewardship Forum, to be carried out successfully.

MULTISAR remains committed to delivering interactive, activity based programming. Participation in community events such as grazing schools, *Holding the Reins* landowner's summit and other forums were also important, providing up to date information brochure/pamphlets on species at risk and grassland management, and supporting partners outreach programs when possible.

2.2 Landholder Awareness

2.2.1 At Home on the Range and Grassland Gazette

MULTISAR's flagship booklet, *At Home on the Range: Living with Alberta's Prairie Species at Risk*, continues to be mailed out regularly to all Alberta Sustainable Resource Development (ASRD) and county offices, provincial parks and Members of the Legislative Assembly (MLAs) of Alberta constituency offices in the Grassland Natural Region. The ACA offered the flagship booklet at a number of tradeshows attended by the public throughout the year. One issue of MULTISAR's newsletter, the *Grassland*

Gazette, was produced in the fall of 2010. The newsletter was mailed out along with the *At Home on the Range* booklet to all MULTISAR cooperating landholders. In total, 419 copies of the *At Home on the Range* booklet and 520 copies of the *Grassland Gazette* were distributed.

2.2.2 Southern Alberta Grazing School for Women

The 7th Annual Southern Alberta Grazing School for Women (SAGSW) was held in Milo July 27th and 28th, 2010. The SAGSW informs landholders about tools for management of their grazing operations and how to use them in the field. MULTISAR assisted in organizing and delivering the event once again and set up a display providing information about the project, native grassland habitats and species at risk. Topics included range and riparian health assessments, stocking rates, farm succession planning and MULTISAR Species at Risk Conservation Plans. Once again this year there was very positive feedback with many women requesting the school be held again next year in their area. Results from a follow up survey conducted in conjunction with other agricultural events for women showed high levels of adoption of the tools learned at the schools and plans to continue implementing positive changes suggested at the schools. These results, along with additional feedback, suggest these workshop events are an excellent way to inform landholders of tools for their ranching operations.

2.2.3 Presentations to Landholder Groups

Presentations were given to landowner groups on three occasions. On May 13th, a presentation on the MULTISAR project was given to the Livingstone Landowner Group in Pincher Creek; another one was given on June 21st to an informal landowner group in Twin Butte; and a short presentation was given to landowners at a NCC event in Irvine on February 11th.

2.3 Youth Education

With the PCF becoming an additional partner on the MULTISAR project in 2009-2010, MULTISAR has increased its presence and involvement with the Forum's activities. In August of 2010, a 2 day Prairie Grassland Appreciation event was held by the PCF and the Helen Schuler Nature Center. The 2 day event had 15 youth participants that were asked to share their thoughts, knowledge and feelings about the prairie environment. Several organizations, including MULTISAR, volunteered staff time to develop presentations and activities for the event. The event organizers took all the pictures, drawings, and statements developed by the youth participants to create a video product showcasing what participants learned and experienced over the 2 day event as part of a community mapping project. This video can be found on the City of Lethbridge website: (http://www.lethbridge.ca/home/City+Hall/Departments/Helen+Schuler+Nature+Centre/Whats+New/Whats+New.htm).

The PCF Education Committee has also developed, in collaboration with the University of Lethbridge, an engaging and interactive 50-minute presentation about Alberta's grasslands designed for grades 5-7 students. The presentation instills an appreciation of Alberta's grasslands to youth and is suitable for educational distance broadcasting and for in-classroom presentations. MULTISAR was an advisor and a financial partner in this initiative.

On October 9th, 2010, the Town of Taber, the Antelope Creek Ranch and MULTISAR jointly hosted a field day for 32 students of a Lethbridge College Land Use Planning course. MULTISAR gave a presentation that provided background about the Grassland Natural Region, its species at risk and land use challenges, and on the MULTISAR project and some of the land use issues on a Town of Taber property where MULTISAR formulated recommendations to improve the habitat quality of the property degraded by multiple land uses. A hands-on range health assessment demonstration was also given by a representative of Antelope Creek Ranch on the property along with several discussions at various sites showing the impact of uncoordinated land use and land development on the property and some attempts to improve northern leopard frog habitat.

On March 10th 2011, MULTISAR gave a presentation to 10 students from the Lethbridge College's Fish and Wildlife Technology Program on the MULTISAR project.

2.4 Public Outreach

2.4.1 Conferences and Workshops

In 2010-2011, MULTISAR presented a poster or gave presentations at a workshop and at two conferences. MULTISAR presented a poster titled "*MULTISAR: Partnering for Species at Risk Conservation*" at the *Human Dimensions of Natural Resource Management* conference hosted by the Columbia Mountains Institute of Applied Ecology in Revelstoke, British Columbia on October 6-7th, 2010. In addition, MULTISAR gave a presentation at the *Native Prairie Restoration/Reclamation Workshop* held in Regina, Saskatchewan on February 16-17th and hosted by the Saskatchewan Prairie Conservation Action Plan, as well as at the *21st Annual Meeting and Conference Alberta Chapter of The Wildlife Society* in Camrose, AB on March 11-13th. For these two presentations, MULTISAR shared its experience with successfully converting 56 ha (140 acres) of cropland back to a functioning tract of native grassland.

2.4.2 Presentations to Interest Groups

MULTISAR gave seven presentations to various interest groups throughout southern Alberta in 2010-2011. On June 5th 2010, MULTISAR presented to a group of community volunteers in Taber about native grasslands and species at risk and the successful partnership between the Town of Taber and MULTISAR in developing a plan to rehabilitate a site historically used by the threatened northern leopard frog and various other species of wildlife. On June 10th, MULTISAR gave an introductory presentation to Alberta SRD's Rangeland Working group. On June 16th, MULTISAR presented to the members of the PCF about MULTISAR's activities. On June 19th, MULTISAR and Operation Grassland Community (OGC) joined forces and gave a presentation on native grasslands and species at risk and led a nature walk at the Ann and Sandy Cross Conservation Area near Calgary. On July 28th, MULTISAR and NCC led a tour for PCF members at the Sandstone Ranch to showcase some areas of interest on the ranch recently acquired by NCC, and other partners, and to discuss the Habitat Conservation Strategy (HCS) completed by MULTISAR in 2009. On October 28th, MULTISAR presented on temperate grasslands, species at risk and the MULTISAR project as part of the Friends of Fish Creek Speaker Series in Calgary. Finally, on January 12th, 2011, MULTISAR presented to the Lethbridge Naturalists Society about Alberta's native grasslands and the MULTISAR project.

2.4.3 Website

The MULTISAR website (www.multisar.ca) continues to be the key portal where up-to-date information about the project, beneficial management practices (BMPs) for species at risk, as well as related documents, news events, and producer stories can be accessed.

2.4.4 Contacts and Outreach

Through the course of any fiscal year MULTISAR staff interact on a daily basis with landholders and other individuals or representatives from a broad diversity of sectors. Between April 2010 and March 2011, a total of 415 contacts were made with 1222 people through direct visits, phone calls, e-mails or presentations, cumulating to 525 hours (Table 1). Excluding two presentations that accounted for 350 people, contacts with rural landholders to discuss the MULTISAR project, species at risk or various aspects of rangeland management made up almost half (44%) of all individuals reached.

Table 1. MULTISAR contacts for 2010-2011.

Contact Type	Number of Contacts	Number of People
Academia	14	56
Company	5	6
Consultant	8	9
Contractor	7	7
Government	60	109
Individual (non-landholder)	4	4
Industry	18	18
Landholder	219	332
Landowner Group	4	50
Media	2	2
Non-Government Organization	72	609
School	0	0
Other	2	0
Total:	**415**	**1202**

2.4.5 Media Exposure

Exposure to various media was greatly reduced this year with reduction in resources. However, MULTISAR received attention in 6 different articles from 5 different media (Table 2).

Table 2. Media exposure MULTISAR received in 2010-2011.

Media Name	Topic of Story	Date
Preserving Our Lifeline (Bow River Basin Council Newsletter)	Endangered in the Basin: MULTISAR – General	March 2010
Medicine Hat News	Federal funding announcement for MULTISAR (ACA) and other conservation programs	August 11, 2010
InterViews (SRD Internal Newsletter)	Recovery of Threatened northern leopard frogs with Town of Taber	September 2010
InterViews (SRD Internal Newsletter)	Release of prairie rattlesnakes seized by Fish & Wildlife	November 2010
Taber Times	Recovery of Threatened northern leopard frogs with Town of Taber	November 10, 2010
Our Work (NCC web page)	Snake survey on a NCC newly acquired property in SE AB	March 16, 2011

2.4.6 Ministerial Address

On August 10th, Member of Parliament, LaVar Payne, from the Medicine Hat Constituency, on behalf of the Federal Environment Minister Jim Prentice, announced funding for MULTISAR and five other projects in southern Alberta during a ceremony held at the Police Point Park Interpretive Centre in Medicine Hat. In addition to the funding provided to ACA for the MULTISAR project, Mr. Payne also stressed how grateful he and his government were to work with groups like MULTISAR to preserve prairie habitats and species at risk.

2.5 Summary of Activities

- Distributed 419 *At Home on the Range* booklets and one issue (520 copies) of MULTISAR's newsletter the *Grassland Gazette*.
- Assisted in organizing and delivering the SAGSW.
- Updated the MULTISAR website with new stories and information.
- With the PCF Education Committee, developed an educational video conferencing presentation featuring grasslands and participated in a Grassland Appreciation event.
- Organized and collaborated in the delivery of a field education program for 32 students and gave a presentation to an additional 10 students from the Lethbridge College.
- Presented a poster at the Human Dimensions of Natural Resource Management conference in BC, gave a presentation at the Native Prairie Restoration/ Reclamation Workshop in Regina, SK and one at The Wildlife Society Meeting in Camrose, AB.
- Gave seven presentations to various interest groups throughout southern Alberta.
- Interacted with over 1202 individuals from various demographic groups.
- Completed one article and gave interviews for another five articles.
- Developed a 3 panel display to be used at landholder or other events.

2.6 Conclusion

MULTISAR's Education, Outreach and Awareness Program has continued in a reduced capacity despite the loss of its dedicated coordinator and has taken advantage of new opportunities. Ongoing partnerships and participation on relevant committees has been instrumental in allowing MULTISAR to be involved in a number of initiatives. The SAGSW, *Grassland Appreciation Days,* and *Field Education Program* for college students are examples of how powerful partnerships can help to achieve common goals. Landholders continue to be the main focus of MULTISAR's activities under the outreach and awareness aspects of this program. Landholders are in a position to directly influence habitat for species at risk, and MULTISAR endeavours to ensure that they have the appropriate tools and knowledge to make management decisions that have positive benefits to both their operation and wildlife habitats. Youth and the general public are also target audiences of MULTISAR's multifaceted Education, Outreach and Awareness Program. Activities continued in 2010-2011 in a decreased capacity.

3.0 HABITAT CONSERVATION STATEGIES

Emily Wesley, Prairie Conservation Forum, Lethbridge, Alberta

Julie Landry-DeBoer and Brad Downey, Alberta Conservation Association.
Lethbridge, Alberta

3.1 Introduction

MULTISAR's Habitat Conservation Strategies (HCSs) strive to balance the conservation needs of multiple species at risk, with the need for healthy rangelands and a sustainable ranching operation on both publicly and privately owned lands in the Milk River, Pakowki Lake, and St. Mary's River Basins. MULTISAR HCSs result from intensive and detailed property evaluations comprised of range inventories, range health assessments, riparian health assessments, and various wildlife surveys. Following these evaluations, stewardship goals and objectives for enhancements and/or conservation are established for each property. All conservation targets are agreed upon by all parties involved in the HCS process and the aspired end result of an HCS is to provide benefits to both the rancher and species at risk.

HCSs are focused in priority areas which were determined and delineated by Multiple-species Conservation Values (MCVs; for more information on MCVs, refer to Downey *et al.* 2008). Areas with high MCVs in southern Alberta include, but are not limited to, the Milk River, Pakowki Lake and St. Mary's River Basins, regions east of Hanna, west of Cardston, and east of the Porcupine Hills.

3.2 HCS Process

The success of MULTISAR relies on the creation of partnerships between landholders, government, and non-government agencies. MULTISAR forms a specific team for each HCS that consists of landholders and representatives from each of the following:

- Alberta Sustainable Resource Development (ASRD) – Fish and Wildlife Division
- ASRD - Lands Division – Rangeland Management and Land Management (where crown land is present)
- Alberta Conservation Association (ACA)
- Prairie Conservation Forum (PCF)
- Other non-government or private industry representatives if applicable (HCS specific)

For each landholder that voluntarily signs up for a HCS, a MULTISAR Letter of Intent is signed (Appendix A). The MULTISAR Letter of Intent clearly lists tasks, commitments, and expectations made by both MULTISAR and the landholder in a checklist format. The

HCS process is always flexible and dynamic as it is guided by the pledges checked off by the both parties.

Management objectives and the implementation plan of conservation efforts are developed by the entire MULTISAR HCS Team and address habitat, wildlife, range, riparian and land management issues identified specifically for that land base. Recovery actions from species-specific Recovery Plans (available at: http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/RecoveryProgram/RecoveryPlans.aspx) and from MULTISAR's Beneficial Management Practices (BMPs; Rangeland Conservation Services Ltd. 2004) documents are used to guide management and enhancement recommendations in the final landholder HCS report.

A completed HCS report will contain:

- List of HCS team members,
- Project goals and objectives,
- Purpose, application, and term of the HCS plan,
- Brief history of ranch,
- Location, climate, soils, land use, and ecological significance of the area,
- Wildlife inventory methods, results and selection of focal management species,
- Range management inventory methods and results (including rare plant and weed summaries),
- Riparian health assessments (if applicable)
- Range and wildlife inferences,
- Species specific BMPs,
- Recommendations and implementation plan for the HCS,
- Industrial development guidelines,
- Monitoring program, and
- All necessary mapping.

Following the completion of the HCS report, and prior to funding any enhancements based on the HCS recommendations, a Stewardship Commitment Letter, that acknowledges the role of each party in the implementation of any proposed enhancements or management modifications, is signed by the applicable landholder, ACA, PCF, ASRD representatives, and any other partnering agency (Appendix B). In addition, prior to implementing any enhancement that includes funding assistance, a Habitat Enhancement Agreement is signed by the landholder and the funder (for an example, refer to Appendix D in Blouin *et al.* 2010). This agreement defines the mutually agreed upon responsibilities and commitments associated with all parties involved with a particular enhancement.

3.2.1 HCS Surveys and Inventories

To effectively manage multiple species at risk at a landscape level it is necessary to comprehend species' habitat requirements, be able to determine what species are present, determine current habitat conditions and availability, as well as identify land uses within

the area. Initially, the baseline data gathered from wildlife surveys, range health assessments, detailed vegetation inventories, and riparian health surveys is used to develop a landholder specific management plan. In the long term, the data collected will provide the baseline to measure the effects that enhancements and management changes will have on wildlife habitats and populations, particularly those related to species at risk. Inventories and monitoring allow MULTISAR to gauge which areas are most valuable for species at risk and if any land use practices present a threat to habitat and/or species at risk. In 2010-2011, HCSs were completed for five properties, the results of which are summarized below.

3.2.1.1 Multi-species Point Count Surveys

Multi-species point count surveys were completed on all five HCS properties in 2010-2011. This process involved recording all wildlife seen and heard within 50 m, 100 m, and/or 200 m from pre-determined survey locations.

Prior to completing any field work, survey locations were established using mapping tools in ArcGIS. Polygons from the Grassland Vegetation Inventory (GVI), the Government of Alberta's biophysical, anthropogenic, and land use inventory for the "white" (settled) area of the province, were applied to the maps as survey units. Survey units were additionally delineated by fence lines, individual pastures and naturally occurring boundaries/barriers. Points, with 200 m survey buffers, were then randomly placed within all GVI polygons, ensuring no overlap with neighbouring polygons, points, or pastures. No overlap between survey points decreased the risk of double counting species, while keeping survey points within the GVI polygon boundaries will enable future analyses of relationships between the range health and wildlife found in each polygon. It was assumed that detectability of wildlife decreases with increased distance from the observation point (Rosenstock *et al.* 2002); consequently, 200 m was chosen as the largest survey distance. Survey points of 100 and 50 m buffers were then used to fill in remaining areas of the polygons using the protocol above. Any GVI polygon that could not accommodate the smallest survey point size (50 m) was not surveyed. During multi-species point count surveys, these small areas were investigated if something of significance (habitat wise or otherwise) was suspected.

MULTISAR's point count survey method required the observer to record all wildlife species detected within the assigned buffer (50 m, 100 m or 200 m), as well as the distance classes in which species were detected (0-50 m, 50-100 m or 100-200 m; Table 3). Surveys were completed in the early morning between 5:00 am and 11:00 am, when the wind was less than 25km/hr, and there was no significant precipitation. Surveyors would walk to their pre-determined survey points and then wait one to two minutes prior to beginning their survey to allow any wildlife to acclimate to their presence. Surveyors would then complete a five minute wildlife survey in which birds, mammals, amphibians and reptiles seen or heard within determined buffers were recorded. Upon arriving at a survey point, it was occasionally deemed necessary to move the survey point location slightly due to visibility issues. If this occurred, the observer assured that the above mentioned requirements of survey location were not violated and a new GPS location was taken.

Table 3. Description of sampling distance categories used in multi-species wildlife surveys.

Point Count Size (m)	Distance Classes
200	0 - 50 m 50 - 100 m 100 - 200 m
100	0 - 50 m 50 - 100 m
50	0 - 50 m

Any pertinent habitat information such as burrows, trees, nests, leks, ephemeral ponds, large shrub complexes, watering sites, and salting areas were also noted and investigated when encountered. Habitat features and any significant wildlife sightings seen or heard 'incidentally' while travelling between survey points were recorded and a GPS location was taken. All wildlife recorded incidentally and at point count locations were entered into the provincial Fish and Wildlife Management Information System (FWMIS). Multi-species point count surveys usually commence mid-May; however, due to inclement weather during the spring months of 2010, surveys were slightly behind schedule. All surveys were completed by the end of the first week of July. The multi-species point count survey is the core wildlife survey method utilized for HCSs, however, MULTISAR also conducts targeted surveys, which are described below.

3.2.1.2 Amphibian Surveys

On all HCS cooperating properties, permanent and ephemeral wetlands, dugouts, and rivers were searched for amphibians following Kendell (2002) protocols. If amphibians were found, a GPS location was noted and habitat information was recorded.

3.2.1.3 Researching Amphibian Numbers in Alberta

The large precipitation events needed to conduct night time amphibian surveys for the Researching Amphibian Numbers in Alberta (RANA) program did occur in 2010. Sixteen RANA routes were completed by MULTISAR and ASRD staff following methods described in Downey (2006).

3.2.1.4 Reptile Surveys

A snake hibernacula survey was conducted on one HCS property. This survey was conducted using the survey protocol described in the Sensitive Species Inventory Guidelines (ASRD 2010). MULTISAR staff successfully found one active hibernaculum (See Table 3). In addition, one greater short-horned lizard (*Phrynosoma hernandesi*) survey was completed on the same HCS property following protocols described by James (2002). The search for lizards was also successful and eight were found on one day with one other short-horned lizard found during the snake hibernacula survey.

3.2.1.5 Mammal Surveys

- Trail camera:
  During the spring and summer of 2010, Infrared Reconyx© trail cameras were positioned on two HCS properties. One camera documented wildlife use along a river, while the other documented wildlife usage within a shrubby area.

3.2.1.6 Bird Surveys

- Grouse:
  Each spring, MULTISAR helps survey all greater sage grouse (*Centrocercus urophasianus*) leks found on HCS cooperators' land during the provincial ASRD sage grouse census. Time permitting; MULTISAR also assists surveys of historical sharp-tailed grouse (*Tympanuchus phasianellus*) leks found on HCS cooperators' land for the Lethbridge Fish and Wildlife office. Surveys follow the protocols outlined by ASRD-FWD (ASRD 2010). Sharp-tailed grouse surveys, looking for previously unrecorded leks, were conducted on one new HCS properties. It should be noted that the spring of 2010 had terrible weather and not all new HCS properties could be assessed.

- Burrowing owl:
  In conjunction with the multi-species surveys, an electronic playback survey was conducted on HCS properties following ASRD-FWD protocols (ASRD 2010) in areas with high potential for burrowing owls (*Athene cunicularia hypugaea*).

- Song meter:
  During the spring, a Song Meter SM2 Digital Field Recorder was positioned on one HCS property. This meter was set up within a cottonwood forest along a river with the hopes of collecting data on cottonwood bird species not detected during multi-species surveys.

- Loggerhead shrike:
  In 2010, MULTISAR assisted with one of the provincial loggerhead shrike (*Lanius ludovicianus*) road-side surveys, which intersect the Milk River Basin. The survey followed the protocols laid out by Prescott (2003).

- Ferruginous hawk:
  Every 5 years, ASRD conducts provincial ferruginous hawk (*Buteo regalis*) block surveys, with the last census being completed in 2005. There are over 100 blocks of which approximately 30 are within MULTISAR's core HCS study area. MULTISAR and ASRD try to survey these 30 blocks annually regardless of the provincial 5 year cycle. In 2010, thirty-three blocks were completed by MULTISAR biologists with surveys following the protocols laid out by Downey (2005).

- Raptor nest searches:
  A search of riparian and other treed or shrubby areas are completed in mid-summer to identify all raptor tree nests and nests along cliffs or coulees. Surveying at this time of the year ensures that young of the year will be present on or near the nest site. A GPS location is taken as close as possible to all nests, either active or inactive and the number of young birds observed is recorded.

3.2.1.7 Riparian Health Inventories

In 2010, ten riparian health inventories were conducted on HCS properties. Depending on the habitat type, these sites were assessed using either Lotic or Lentic Inventory Health Assessment protocols (Cows and Fish 2010).

3.2.1.8 Range Inventories

A.) Field Methods:

Range inventories for HCS properties include detailed vegetation transects, Robel pole vegetation measurements, and range health assessments. Locations of transects and range health assessments are decided based on polygons created using the Agricultural Region of Alberta Soil Inventory Database (AGRASID) soils information correlated with GVI specifications, Valtus Color (aerial photo) imagery and Alberta Township Survey data. Detailed transects are then established on representative range sites in each field.

Inventory data collection and analysis are based on the protocol established by ASRD (Willoughby 2007). The transects are established by positioning a 50 m tape on the ground at each site, with GPS coordinates recorded at the start and end points. Plant composition and community type are determined using a Daubenmire frame (0.1 m^2). Foliar cover for grasses, forbs and shrubs are estimated and recorded on the provincial standard Vegetation Inventory Form (MF5). Foliar cover of shrubs are also recorded in a 1 m^2 frame. The average cover of each species is calculated and expressed as a percent value. In addition, a 0.25 m^2 frame is used to collect litter values. The Robel pole determines vegetative height and density and is recorded at each detailed transect every 10 m using visual obstruction readings (VOR). Photographic reference points are taken for each detailed transect. Two photographs are taken at each start point of the transect; one of a landscape view looking down the transect, and one from above looking down over the 1 m^2 frame providing a structural view of the plant community. Rare and invasive plants are recorded when they are observed incidentally.

Range health assessments are completed in conjunction with the detailed transects. Range health assessments are performed by placing a 50 m transect in representative areas and recording the dominant plant species at each 0.5 m mark. One plot frame (0.25 m^2) is raked to determine litter values. Range health score sheets are completed based on the ASRD protocol (Willoughby 2007). Tame pasture (non-native, planted forage species) health assessments are conducted using the same range health assessment methods. Tame pasture health score sheets are then completed based on the ASRD protocol (Adams *et al.* 2005a).

B.) Determining Grazing Capacity:

The relative composition and abundance of the individual species, in conjunction with the range site description are used to determine the range plant community. The *Range Plant Communities and Range Health Assessment Guidelines for the Dry Mixedgrass, Mixedgrass and Foothills Fescue Natural Subregions of Alberta* (Adams *et al.* 2005b; Adams *et al.* 2005c; Adams *et al.* 2005d) are used to determine the plant community for the individual polygons.

The plant community guides provide suggested stocking rate values for each predetermined plant community, called an ecologically sustainable stocking rate (ESSR). The ESSR reflects the maximum number of livestock a particular plant community can support (Adams *et al.* 2005b). When the ESSR is multiplied by the area of a plant polygon, the result is a carrying capacity, reported in animal unit months (AUMs). Carrying capacity sometimes needs to be adjusted to take into account limiting factors such as grazing distribution, multiple use, and range health. This adjustment (reduced value) results in the grazing capacity, which is also reported in AUMs.

An AUM is defined as the amount of dry matter or forage that one animal unit (AU) uses in one month. The standard AU grazing animal is a 1,000 lb cow with or without an unweaned calf up to six months of age. This value was set from the past when cattle were smaller bodied size. Because today's grazing animal is larger, adjustments must be made to this standard to compensate for a larger animal consuming more forage. Similarly, smaller animals such as weaned calves and yearlings consume less forage, and therefore are adjusted down. Weaned calves are often adjusted to 0.5 AUs, yearling steers or heifers are adjusted to 0.75 AUs and bulls are adjusted to 1.5 AUs.

C.) Range Health:

Range heath is a measurement defined as the ability of rangelands to perform key functions. The five indicators of range health are productivity, site stability, capture and beneficial release of water, nutrient cycling, and plant species diversity (Adams *et al.* 2005a). The first indicator determines the integrity and ecological status of a community, which takes into account plant species composition, and rates whether the community is a potential native community or late seral stage (high range health), or seral to early seral stages (lower range health). Early seral stages and lower rated range health communities tend to be less stable, more prone to weed invasion and less able to bounce back after increased grazing pressure. The second indicator, when measuring range health, looks at the community structure to ensure there is high diversity. Communities with high diversity tend to be more efficient at nutrient cycling and energy flow, as well as have the highest possible forage production. The abundance or absence of plant residue to indicate the level of hydrologic function and nutrient cycling in the community is the third indicator measured. Carry over and litter benefit a community by capturing moisture, indicator) are observed to determine stability of a site. Good vegetative cover and minimal bare soil are ideal in a community to prevent erosion. Lastly, noxious weeds

observed in a community are recorded. Weed invasion is more likely on rangelands with poorer health.

A range health score ranking in the healthy category indicates that all the key functions of the rangeland are being performed and are functioning properly. This suggests that current management (stocking levels, grazing distribution, etc.) is in line with the capacity of the rangeland and grazing will be optimal. A rating of healthy with problems states that not all of the key functions are being performed. This suggests that these areas should be monitored and perhaps minor adjustments should be made to management practices to ensure recovery to a healthy class. An unhealthy score means that few of the key functions are being performed and urgent action is required to significantly alter management practices. However, there are some significant wildlife species that thrive in varying range conditions and depending on management goals, alterations may or may not be required.

D.) Results by Property:

MULTISAR 13: This property is approximately 345 hectares (852 ac) in size. Twenty-eight (28) detailed transects were conducted on this property as well as 11 additional range health assessments. With such a variety of range sites, including both north and south facing steep slopes, a diverse number (17) of plant communities were observed on the property.

MULTISAR 14: This property is approximately 523 hectares (1292 ac) in size and in total, 11 plant communities were observed. Nineteen (19) detailed transects, 4 additional range health assessments and 2 tame health assessments were conducted on the property.

MULTISAR 15: Another property of similar size (481 hectares or 1188 ac), on which thirteen (13) detailed transects, 5 additional range health assessments and 6 tame health assessments were performed. In total, 11 plant communities were observed. Two (2) rare plants were observed on this property: small-flowered hawkweed and Cusick's yellow paintbrush.

MULTISAR 16: This property consists of approximately 389 hectares. Thirteen (13) different plant communities were observed on this property from the 11 detailed transects and 7 additional range health assessments that were conducted. Three (3) rare plants were identified, which included Cusick's yellow paintbrush, a grapefern species and pale blue-eyed grass.

MULTISAR 17: This property is approximately 126 hectares (312 ac) in size. Three (3) detailed transects, 2 additional range health assessments and 3 tame health assessments were conducted on this property. Six (6) plant communities were observed and one rare plant was identified (intermediate hawk's-beard).

3.2.1.9 Wildlife and Range Health Inferences

Data gathered from both the detailed wildlife and range health surveys were compiled and entered into ArcGIS for mapping. The maps created displayed range health and wildlife sightings within the various management units (pastures) per GVI polygon for each HCS landholder. MULTISAR staff were then able to visually relate range health to various wildlife species and habitat features to establish a management plan for each management unit that incorporates BMPs for sustainable ranching and conservation of species at risk.

3.2.2 Evaluation and Monitoring Protocols

Over the past two years, MULTISAR has established a formal evaluation and monitoring protocol for HCSs. To ensure that data is collected consistently, concisely and effectively year after year, the new protocol outlines specific timelines for monitoring and evaluation and all tasks that accompany them. In addition, a revamped MULTISAR HCS enhancement database is in place to house data collected during evaluations and monitoring (See Section 5.0 for further details).

3.3 MULTISAR's Achievements

Since 2004, field work has been completed on 17 HCSs under MULTISAR encompassing approximately 238, 821 acres within the Milk River, Pakowki Lake, and St. Mary's River Basins (Table 4).

Table 4. Habitat Conservation Strategy participation summary.

Year*	# of Landholder Participants in the Program	Acres Surveyed
2004	2	60, 528
2005	1	160
2006	10[x]	79, 091
2007	2	48, 667
2008	2	7, 183
2009	3	38, 515
2010	5	4, 677
Total	25[†]	238, 821

* HCSs were counted in the year in which field work was initiated, however, some surveys continued over more than one year.

[x] In 2006 MULTISAR absorbed the Western Blueflag Program and its 8 participating landholders.

[†] Some HCS properties accounted for more than one landholder.

During the 2010 field season, wildlife and range surveys were initiated and completed on approximately 4,700 acres under the MULTISAR HCS program. As a result of the 2010 surveys, many significant sightings were recorded (Table 5). Through the MULTISAR HCS program, over 30,300 wildlife sightings (of which approximately 2,300 were from 2010) have been submitted into FWMIS since 2004.

Table 5. Species at risk recorded during the 2010 Habitat Conservation Strategy field season.

Species	General Status[1]	Legislative Status[2]	# of Observations	Feature	Significance
Ferruginous Hawk	At Risk	Endangered	4 adults	1 Nest	Nest site is a historic nesting location
Trumpeter Swan	At Risk	Threatened	2		Not previously recorded in FWMIS for the property
Swift Fox	At Risk	Endangered	1		
Short-horned Lizard	At Risk	Endangered	9		Not previously recorded in FWMIS for the property
Grizzly Bear	May be at Risk	Threatened	1	Scat	Not previously recorded in FWMIS for the property
Great Plains Toad	May be at Risk	Data deficient	1		Not previously recorded in FWMIS for the property
Plains Spadefoot	May be at Risk	N/A	1+ 25-50	2 breeding sites	Not previously recorded in FWMIS for the property
Baird's Sparrow	May be at Risk	N/A	42		
Prairie Falcon	Sensitive	Special Concern	2 adults		Evidence of successful reproduction
Sharp-tailed Grouse	Sensitive	N/A	10 adults + 20 grouse on lek	1 lek and 2 satellite leks	Lek is a historic dancing ground location. The 2 satellite leks were not previously recorded
Swainson's Hawk	Sensitive	N/A	8 adults	1 Nest	Evidence of successful reproduction
Sprague's Pipit	Sensitive	Threatened	51		
Long-billed Curlew	Sensitive	Special Concern	5		
Loggerhead Shrike	Sensitive	Special Concern	1		
Bald Eagle	Sensitive	N/A	1 adult		
Golden Eagle	Sensitive	N/A	1 adult		
Northern Harrier	Sensitive	N/A	17 adults		
Brewer's Sparrow	Sensitive	N/A	26 adults		
Grasshopper Sparrow	Sensitive	N/A	9 adults		
Upland Sandpiper	Sensitive	N/A	1		
Sora	Sensitive	N/A	9		
Least Flycatcher	Sensitive	N/A	8		
Baltimore Oriole	Sensitive	N/A	2 adults		
Western Tanager	Sensitive	N/A	3 adults		

Species	General Status[1]	Legislative Status[2]	# of Observations	Feature	Significance
Common Yellowthroat	Sensitive	N/A	1		
American White Pelican	Sensitive	N/A	2		
Barn Swallow	Sensitive	N/A	5		
Northern Pintail	Sensitive	N/A	44		
Lesser Scaup	Sensitive	N/A	16		
Horned Grebe	Sensitive	N/A	3		
Common Nighthawk	Sensitive	Threatened	2		
McCown's Longspur	Secure	Special Concern	46 adults		
American Badger	Sensitive	Data deficient	3		
Pronghorn	Sensitive	N/A	10		
Prairie Rattle Snake	Sensitive	Data deficient	11	Hibernaculum	Hibernaculum not previously documented in FWMIS
Wandering Garter Snake	Sensitive	N/A	1	At same hibernaculum as prairie rattle snake	Hibernaculum not previously documented in FWMIS
Bullsnake	Sensitive	N/A	1	At same hibernaculum as prairie rattle snake	Hibernaculum not previously documented in FWMIS
Plains Garter Snake	Sensitive	N/A	1		

[1]Alberta General Status (ASRD 2005)
[2]Legislative Status for Canada's Species at Risk Act: (http://www.sararegistry.gc.ca) or Legislative Status Alberta Wildlife Act: (http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/SpeciesSummaries/SpeciesAtRiskFactSheets.aspx
N/A = not assessed

3.4 2010-2011 Implementation of HCS Habitat Enhancements

Several habitat enhancements and management changes were facilitated through the MULTISAR HCS process. The following includes all new and continued enhancements for 2010-2011. Enhancements considered priority 1, 2, 3, or general are based on individual HCS reports and specific HCS team reviews. Since 2005 MULTISAR and HCS participants have completed 38 habitat enhancements ranging from native reseeding to upland watering sites (Figure 1).

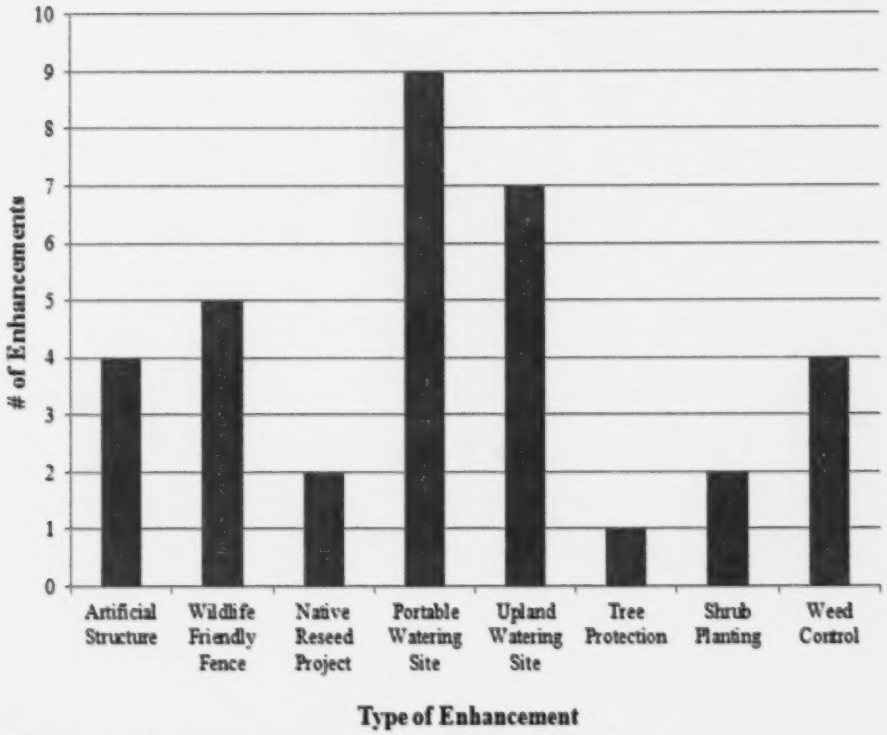

Figure 1. Habitat enhancements completed since 2005.

Priority 1:

a. MULTISAR 2: Continued the 2007 Downy Brome Project which included re-spraying 90 acres of abandoned cultivated land that was at one point infested with downy brome. There was also some custom spraying done around buildings and the yard site targeting kochia and Russian thistle. Native seed, with appropriate seed analysis certificates, which ensured the seed mixture did not contain any invasive species, was broadcast seeded in the spring of 2010. Installment of a temporary electric fence, to keep out livestock, was attempted, but is now planned for the next growing season (2011).

b. MULTISAR 7: Completed a wildlife friendly cross fence, equipped with small reflective markers, within sage grouse habitat. This fence will be beneficial to both wildlife and the HCS participant. ACA's Sage Grouse Program contributed the grouse fence reflectors.

c. MULTISAR 4: Fenced off a lone poplar tree to protect it from cattle damage. The system used still allowed use of the tree's shade for cattle.

d. MULTISAR 9: Drilled a water well in a tame pasture. Water licence application is in process. Once completely installed, this well will help provide water to the tame pasture, allowing for spring grazing. Grazing this pasture in the spring allows native grasses in other pastures to be grazed at a later time.

e. MULTISAR 12: Assisted with completing another water licence application for a large property. This HCS property's main management concern is lack of water to many of its pastures.

Priority 2:

a. MULTISAR 4: Planted native chokecherry (*Prunus virginiana*) and thorny buffaloberry (*Shepherdia argentea*) to enhance shrubby areas for loggerhead shrikes on one HCS property.

b. MULTISAR 7: Planted native silver sagebrush (*Artemisia cana*) plugs to enhance a native reseeding project.

c. MULTISAR 9: Replaced, repaired, or removed more than 5 km of fenceline on an HCS property. All new fences are wildlife friendly and will be used to fence off encroaching tame grasses, defer grazing of native grasses, and to allow improved access to water sources.

Priority 3:

a. MULTISAR 9: Drilled another water well in a tame pasture. Water licence application is in process. Once completely installed, this well will help defer the use of native grass elsewhere and will eventually provide a water source for three pastures.

General Recommendations:

a. MULTISAR 10 and 11: Weed control of Canada thistle, hound's tongue, bull thistle, spotted knapweed, and tall buttercup. MULTISAR purchased and delivered to two HCS participants a post-emergence broadleaf herbicide called Restore™.

b. MULTISAR 4, 7, and 13: Wildlife friendly fencing was completed in collaboration with the Alberta Fish and Game Association and ACA's Pronghorn project on three of MULTISAR's HCS properties (see Table 6 for accomplishments).

Table 6. Wildlife friendly fencing completed in 2010-2011.

Task Completed	Total Length of Fencing (km)
Installation of double stranded smooth wire	> 27
Manipulation of existing barbed wire to wildlife friendly heights	> 72
Removal of barbed wire	>1.6

Additional In-kind Enhancements:

MULTISAR 13: Several enhancements were completed by the Land Management Program of the ACA on one of the HCS properties. This included removal of enormous amounts of refuse, gas and electrical infrastructure, as well as all buildings. ACA's Sage Grouse Program contributed sage grouse fence reflectors.

3.5 Conclusion

MULTISAR has increasingly become more recognized and its HCS work has grown tremendously throughout the St Mary's River, Pakowki Lake and Milk River basins. MULTISAR has developed plans for approximately 238, 821 acres of land, of which a large portion is interconnected, allowing for landscape planning versus single property initiatives. MULTISAR HCSs will continue to be the cornerstone of the MULTISAR project with efforts made to increase the land base we work with in our priority areas and "connect" additional properties adjacent to participating HCS landholders. MULTISAR has and will continue to provide open communication, information and awareness, team based wildlife habitat planning, and will continue to build long-term relationships with landholders, government, non-government organizations, and industry.

3.6 Literature Cited

Adams, B. W., G. Ehlert, C. Stone, M. Alexander, D. Lawrence, M Willoughby, D. Moisey, C. Hincz and A. Burkinshaw. 2005a. Range Health Assessment for Grassland, Forest and Tame Pasture. Public Lands Division, Alberta Sustainable Resource Development. Pub. No. T/044.

Adams, B. W., L. Poulin-Klein, D. Moisey and R. L McNeil. 2005b. Rangeland Plant Communities and Range Health Assessment Guidelines for the Dry Mixedgrass Natural Subregion of Alberta. Rangeland Management Branch, Public Lands and Forests Division, Alberta Sustainable Resource Development, Lethbridge, Pub. No. T/040. 106 pp.

Adams, B. W., L. Poulin-Klein, D. Moisey and R. L McNeil. 2005c. Rangeland Plant Communities and Range Health Assessment Guidelines for the Mixedgrass Natural Subregion of Alberta. Rangeland Management Branch, Public Lands and Forests Division, Alberta Sustainable Resource Development, Lethbridge, Pub. No. T/03940. 101 pp.

Adams, B.W., R. Ehlert, D. Moisey and R .L. McNeil. 2005d. Rangeland Plant Communities and Range Health Assessment Guidelines for the Foothills Fescue Natural Subregion of Alberta. Rangeland Management Branch, Public Lands Division, Alberta Sustainable Resource Development, Lethbridge, Pub. No. T/038 85 pp.

Alberta Sustainable Resource Development. 2010. Sensitive species inventory guidelines. Alberta Sustainable Resource Development, Fish and Wildlife Division. Edmonton, AB. 69pp. Available online: http://srd.alberta.ca/ManagingPrograms/FishWildlifeManagement/documents/SensitiveSpeciesInventoryGuidelines-Aug2010.pdf

Alberta Sustainable Resource Development (ASRD). 2005. The general status of Alberta wild species. Available online: http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/GeneralStatus/Default.aspx

Blouin, F., B. L. Downey, B. A. Downey, S. L. Frank, D. J. Jarina, P. F. Jones, J. P. Landry-DeBoer, and K. S. Rumbolt. 2010. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2009-2010 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 135, Edmonton, AB. 71 pp.

Cows and Fish. 2010. Alberta Lotic Wetland Health Assessment for Streams and Small Rivers and Lentic Health Assessment (Survey) User Manuals. Online: http://www.cowsandfish.org/riparian/health.html. Accessed: January 2011.

Downey, B. A. 2003. Survey protocol for the Richardson's ground squirrel. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta species at Risk Report No. 69, Edmonton, AB.

Downey, B. L. 2005. The 2005 ferruginous hawk inventory and population analysis. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report 101. Edmonton AB, 15 pp.

Downey, B. A. 2006. Plains spadefoot and Great Plains toad surveys. Pages 46-52 *In* Downey, B. A., B. L. Downey, R. W. Quinlan, T. B. Clayton, C. L. Sikina and P. F. Jones (eds). 2006. MULTISAR: A Multi-species conservation strategy for species at risk 2005-2006 report. Alberta Species Report No. 108. Alberta Sustainable Resource Development, Fish and Wildlife Division, Edmonton, AB, 88 pp.

Downey, B. L., B. A. Downey, R.W. Quinlan, S. L. Frank, D. E. Cross, D. J. Jarina. C. G. DeMaere, J. Nicholson, and P. F. Jones. 2008. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2007-2008 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No 117, Edmonton, AB.

James, J. D. 2002. A survey of short-horned lizard (*Phrynosoma hernandesi hernandesi*) populations in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 29. Edmonton, AB. 25pp. http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/ProgramReports.aspx

Kendell, K. 2002. Survey protocol for the northern leopard frog. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 43, Edmonton, AB.

Prescott, D. R. C. 2003. The use of call playbacks for censusing loggerhead shrikes in southern Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No. 67, Edmonton, AB.

Rangeland Conservation Service Ltd. 2004. Beneficial Management Practices for the Milk River Basin, Alberta: A component of the multi-species conservation strategy for species at risk in the Milk River Basin (MULTISAR). Unpublished report prepared for Alberta Fish and Wildlife Division and Alberta Conservation Association. Airdrie, AB.

Rosenstock, S. S., D. R. Anderson, K. M. Giesen, T. Leukering, and M. F. Carter. 2002. Landbird counting techniques: Current practices and an alternative. The Auk 119(1): 46-53.

Willoughby, M., B. W. Adams, and J. Carlson. 2005. Range Survey Manual. Rangeland Management Branch, Alberta Public Lands and Forest Division, Alberta Sustainable Resource Development, Edmonton, AB.

4.0 SPECIES AT RISK CONSERVATION PLANS

Darryl Jarina and Kristen Rumbolt, Prairie Conservation Forum, Lethbridge, Alberta

4.1 Introduction

Species at Risk Conservation (SARC) Plans were introduced in 2007 as an extension of the MULTISAR Habitat Conservation Strategy (HCS). HCSs have been developed to conserve species at risk habitat at the landscape level, but are resource-demanding and therefore, are most effective on a limited number of ranches in priority species at risk areas. However, at the scale of the entire Grassland Natural Region (GNR), a faster and more condensed process that applies the findings of HCSs on a larger number of holdings needed to be developed. Initially, the SARC Plan process was evaluated in two high value areas for multiple species at risk; the Hanna region and the Milk River Basin (See Downey *et al.* 2008). The landholders' satisfaction with the SARC Plan assessment in these areas has led to the continuation of the program and the expansion into additional key multi-species at risk areas identified within and adjacent to the GNR, including the Rocky Mountain and Parkland Natural Regions, and the South Saskatchewan River Sub-basin. SARC Plans are also delivered in the GNR by Operation Grassland Community (OGC), a program of the Alberta Fish and Game Association.

The goal of the SARC Plan is to provide landholders with the appropriate tools and knowledge to make subtle management changes to their operation to benefit species at risk and other wildlife, based on a visual assessment of the key wildlife habitats found on their ranch. The objectives of the SARC Plan are to:

1. Use the knowledge learned from the implementation and monitoring of HCSs to support the Beneficial Management Practice (BMP) recommendations provided to ranches across the entire GNR of Alberta.
2. Recommend and assist landholders with implementing appropriate BMPs for key species at risk or other wildlife habitats.
3. Track awareness and perceptions of species at risk.
4. Track management changes and results.

The MULTISAR SARC Plan process is divided into 6 steps; 1) identification of priority lands, 2) landholder contact 3) preliminary background research, 4) on-site habitat assessment, 5) SARC Plan development and delivery, and 6) follow up. The details of these steps are briefly described below. For a more complete account of the SARC Plan process, please refer to Alberta Species at Risk Report No. 117 (Downey *et al.* 2008).

4.2 SARC Plan Process

4.2.1 Step 1: Identification of Priority Areas

In 2007, a map of priority areas for multi-species conservation was developed from a series of 17 habitat suitability models for MULTISAR's priority species. From this map, MULTISAR identified priority areas to implement its extension program and targeted communities to approach for SARC Plan development. For a detailed explanation of how the map was generated and of MULTISAR priority areas please refer to Alberta Species at Risk Report No. 117 (Downey *et al.* 2008).

4.2.2 Step 2: Landholder Contact

The next stop in the process is to engage landholders in priority areas who are interested in participating in the program. Initial landholder contact was made by MULTISAR in the form of "cold calls", which would introduce the program to the landholder. More recently, initial contact and introduction to SARC Plans has come from presentations to landowner or stewardship groups and through word of mouth between landholders. The result has been an increase in interested parties contacting MULTISAR.

4.2.3 Step 3: Preliminary Analysis

Once a landholder has decided to have a SARC Plan completed for their ranch, the preliminary background research is initiated. Preliminary work is conducted in the office prior to the SARC Plan field assessment and includes a review of all the current wildlife and range data for the property. This may include the following: a search of the provincial Fish and Wildlife Management Information System (FWMIS) database for all previously documented wildlife sightings; Habitat Suitability Index (HSI) model review to determine habitat potential for MULTISAR focal species; a review of species at risk distribution maps to determine which species may occur on the ranch; GIS mapping for field planning, including identification of key habitats, critical ungulate wintering range and prior wildlife sightings; review of applicable BMPs and species at risk recovery actions for expected species; and communication with the local range agrologist to determine current management objectives on leased lands and ensure that SARC Plan recommendations are compatible with these objectives.

All information gathered during this preliminary research is used to provide an initial understanding of the potential species and wildlife habitats that may be present on the ranch, in order to inform the consultation with the landholder and the field assessment. The entire preliminary process takes approximately half a day to complete, but this may vary depending on ranch size.

4.2.4 Step 4: Landholder Visit and Habitat Assessment

The next step in the SARC planning process is a one on one visit with the participating landholder. At this time, a review of the ranch history, current ranch management, and future goals is conducted. The meeting also allows the biologist to discuss wildlife species that have been seen by the landowner on their land. A standardized questionnaire, which was developed for the program, is given during this initial consultation (Appendix C). The information collected from the questionnaire will eventually be used along with the results of a follow up questionnaire two years after development of the SARC Plan to measure changes in landholders' awareness and perception of species at risk (see step 6 below).

After consulting with the landholder, a field assessment is conducted. The field component is not designed as a complete wildlife inventory, but rather an identification of key species at risk and other wildlife habitats. This allows field assessments to be conducted any time during the year, except during periods of snow cover or adverse weather. Pictures and GPS locations of key habitat features are taken. These features, along with fence lines, water bodies, and historical wildlife sightings, are later mapped and included in the report. The entire ranch is assessed to determine if the priority species identified during the preliminary analysis occur or have the potential to occur in the available habitats on the ranch. The MULTISAR BMPs, as well as the current recovery or management actions for the selected species are then reviewed, and those that are relevant are provided as recommendations to the landholder to improve or maintain species at risk and wildlife habitat on the ranch, without negatively impacting their operation.

4.2.5 Step 5: MULTISAR SARC Plan

The result of the SARC Plan process is a personalized report which highlights the data collected prior to and during the habitat assessment. The plan includes: an introduction outlining the goals and objectives of the SARC Plan; a results section detailing all habitat features, current management approach and opportunities for habitat improvements, a map showing the various pastures and the locations of structures, combined with a list of pasture-specific recommendations which details the appropriate BMPs for the selected management species or group of species, and a conclusion, along with a series of informative brochures on species at risk and their management that complement the report. The report, a certificate and a gate sign are delivered in person to the landholder, and it is during this second meeting that the MULTISAR team discusses the results with the landholder and makes the appropriate adjustments to the report where necessary to ensure it can be realistically and economically implemented by the landholder.

4.2.6 Step 6: Follow Up

The landholder is contacted on an annual basis so that MULTISAR can receive updates on the implementation of the plan, receive feedback on any management changes that were applied, answer questions that may have arisen since last time of contact, and to maintain the relationship. In 2010, a follow up questionnaire was developed in order to gather information about changes in landholders' perception of wildlife and species at risk since implementation of the plan. This will allow MULTISAR staff to compile data for all participating landholders to determine whether SARC Plans are effective at changing misconceptions towards species at risk and whether these plans encouraged the implementation of BMPs on cooperating ranches. It will also allow landholders to provide feedback on the positives and negatives of the SARC Plan which will allow MULTISAR to make changes to the plans as necessary.

4.3 Achievements

Since the inception of the SARC Plan program in 2007, 62 assessments (22 in 2010-2011) have been completed throughout the GNR covering a total area of 138,999 acres (53,105 acres in 2010-2011). Continued collaboration with OGC to produce SARC Plans was successful again this year. Through this collaboration, another 4 assessments, with property covering an additional 18,840 acres, were in the process of being completed by OGC at the time of this report's publication.

For the 22 SARC Plans completed by MULTISAR this year, BMPs were recommended for the following species and groups of species:

1. Grassland Birds – 19 (284 quarter sections = 45, 473 acres)*
2. Amphibians – 19 (282 quarter sections = 45, 125 acres)
3. Sharp-tailed grouse – 7 (140 quarter sections = 22, 410 acres)
4. Raptors – 13 (140 quarter sections = 22, 368 acres)
6. Trumpeter Swans – 3 (13 quarter sections = 2000 acres)

* BMP recommendations for species/groups of species are not mutually exclusive.

In June of 2010, MULTISAR entered into a cost sharing agreement for a portable watering unit with one of its SARC Plan cooperators. The unit will be used on a shallow lake that is known to have historically hosted breeding trumpeter swans. It was determined that a watering unit at this location will help alleviate the pressure on the lake from cattle, thereby increasing shoreline health, increasing water quality, and reducing disturbance to trumpeter swans using the lake. MULTISAR worked collaboratively with Cows and Fish on this project, who conducted a riparian health assessment at the site. This information will be used as a baseline to determine if the watering unit achieved the desired effects of increasing wetland and shoreline health. This site will be used as a demonstration site to show how stewardship activities can have positive results for both

wildlife and cattle operations. A site tour was conducted in late June with a group of local ranchers.

Several habitat improvements that were developed as demonstration sites on SARC Plan cooperator properties were monitored this year and will continue to be monitored on a regular basis to ensure that they achieve their objectives. Habitat improvements monitored include a nesting platform erected for ferruginous hawks, a windbreak and wetland, riparian and shelterbelt fencing projects. Monitoring of these sites involves taking photos of the improvement and surrounding area from predetermined locations in order to detect any wildlife use and habitat changes that may have occurred from year to year. Notes will also be taken to complement the photos. Yearly discussions with the landowners will help determine the success of these improvements, not only in creating and maintaining wildlife habitat, but additionally, in how they may have impacted cattle operations, either positively or negatively.

Through the SARC Plan Program, MULTISAR has been evaluating landholders' awareness, use of BMPs and perceptions towards species at risk using a standardized questionnaire. Of the 22 SARC Plans, 19 questionnaires[2] were completed in 2010-2011 and results were similar to those in previous years in that perceptions towards species at risk were largely positive. However, these questionnaires were only given to landholders who agreed to participate in the SARC Plan program and might have already been positively biased toward species at risk. Therefore, they may not be representative of the views of all landholders in the GNR. Tables in Appendix D summarize the answers to key questions on the questionnaire from 2010-2011 participants. Results show the perceptions and awareness of landholders towards species at risk. The majority of respondents (74%) believed that species at risk are beneficial to their operation, while 21% were unsure if species at risk were in any way beneficial. Most landholders (95%) thought that their land was important for species at risk and other wildlife, and a large proportion (74%) were able to list some of the species at risk their ranch provided habitat for. Although most respondents (68%) were unsure if species at risk legislation, such as the Alberta Wildlife Act and Species at Risk Act, is a benefit or detriment to them and their operation, most (63%) agreed that species at risk should be protected by law. Twenty one percent (21%) of those agreed what this legislation is in fact a benefit to them. However, some of these participants were cautious about too much government involvement in species protection. The results of the survey also showed that most participants (58%) believed that they were already making adjustments in their operation for species at risk.

Most landholders are already using important BMPs such as maintaining native prairie and using rotational grazing. However, there are still many important practices that are not often used, such as fall seeding crops and delaying fieldwork until wildlife have finished nesting.. Possible reasons for the limited use of these practices may be due to a

[2] Two questionnaires were not completed in 2010 because landholders were unavailable to complete the questionnaire prior to the printing of this report. In addition, one SARC Plan was completed on new lands purchased by a cooperating landowner who had completed the questionnaire in the previous year.

lack of awareness on the part of the landholder or the belief that many of these BMPs have an undesirable cost or inconvenience associated with implementing them.

A follow up questionnaire was developed in 2010 and will be given periodically in the future to monitor if and how SARC Plans are improving perceptions and awareness of species at risk and adoption of BMPs.

4.4 Conclusion

Since their inception in 2007, interest in SARC plans has continuously grown among landholders. In the first few years of the program, landowners previously known to staff were approached. Word of mouth between neighboring landowners as well as the work of the extension program helped to engage even more landowners. MULTISAR staff are experimenting with various approaches to find the most efficient method by which to engage landowners in the program. In 2010-2011 approximately 18% of landholders who agreed to have SARC Plan assessments completed were the result of presentations/field days given by MULTISAR staff. Referrals from Alberta Sustainable Resource Development (ASRD), Alberta Conservation Association (ACA), Nature Conservancy of Canada (NCC), and OGC made up another 59% of cooperating landowners. Most of these landowners did not previously know about the program but were more than happy to take part. The other 23% of the landowners were either met during grazing schools, referred by current cooperators, or contacted MULTISAR directly. This indicates that MULTISAR's outreach efforts and continued work in key areas, is progressively reaching more and more landowners across southern Alberta. It seems that once landowners find out about the program, they are in most cases very eager to participate.

Myths surrounding species at risk and the loss of land or management control to the government are still common views after discussions with landowners. Some landholders are still apprehensive about the program and sharing information on species at risk with the government, fearing loss of control of their land. These fears seem to be more prevalent in areas where MULTISAR has been less involved. Many claim that they have known somebody who has lost control of their property due to having species at risk on their land. After meeting with these landowners and discussing the program, most quickly realize that this program is not about control, but is simply about providing the best possible information so that they can make informed management decisions. MULTISAR hopes to continue to dispel myths surrounding species at risk by continuing to build and maintain relationships with individuals in hopes that the word will spread between landholders. MULTISAR hopes to continue to partner with other organizations such as OGC in the development and delivery of SARC Plans. It is hoped that partnerships such as this one will increase the capacity of MULTISAR to engage landholders and achieve greater awareness of species at risk and their conservation, especially in areas where the partnering organization may be well known and trusted.

4.5 Literature Cited

Downey, B. L., B. A. Downey, R. W. Quinlan, S. L. Frank, D. E. Cross, D. J. Jarina. C. G. DeMaere, J. Nicholson, and P. F. Jones. 2008. MULTISAR: A Multi-Species Conservation Strategy for Species at Risk 2007-2008 Report. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Report No 117, Edmonton, AB.

5.0 MULTISAR EVALUATION AND MONITORING PROTOCOL

Brad Downey and Paul Jones, Alberta Conservation Association, Lethbridge, Alberta

Carla Koenig, Carla Koenig Environmental, Hill Spring, Alberta

5.1 Introduction

Conservation groups continue to face the challenge of demonstrating to stakeholders that projects are accomplishing their objectives and goals. Without effective evaluations or monitoring there is no way of measuring the effects of a project (Margoluis and Salafsky 1998). To ensure an effective project, an evaluation and monitoring plan should be developed that identifies stakeholders, strategies to collect data, indicators that will be measured and a timeline as to how, when, and by whom the data will be collected (Margoluis and Salafsky 1998).

The following sections provide a broad overview of MULTISAR's Evaluation and Monitoring Protocols for the Habitat Conservation Strategy (HCS) component of the MULTISAR project. The Evaluation and Monitoring Protocols will help direct the project to ensure that it is accomplishing its objectives and goals. Further details such as statistical analysis of the data collected and acquired from HCSs will be determined in 2011-2012. Monitoring of habitat enhancement projects according to the protocol began in 2010.

5.2 Evaluation of the MULTISAR Project

Evaluation is the process that critically examines a project. It involves collecting and analyzing information about a project's activities, characteristics, and outcomes (MEERA 2009).

An evaluation of each HCS will occur five years after the start of its implementation. Fewer new HCSs may be initiated during an evaluation year, as time will be required to complete the evaluation of others. These evaluations will help document how effective HCSs are at positively influencing habitat management, habitat quality and landholders' perceptions of species at risk. Evaluation of the MULTISAR project will occur on three levels: landholders, range health, and wildlife Best Management Practices (BMP).

5.2.1 Evaluation Process

Five years after their implementation, each HCS will be evaluated. This will include all HCS properties that were completed in the same year. Evaluation of the MULTISAR project includes:

1) Landholders – a questionnaire will be completed with the landholder to document what they have observed over the past two to five years and identify any changes, positive or negative, that occurred due to their partnership with MULTISAR. The questionnaire will also be used to measure changes in the landholders' perception and knowledge of species at risk, and range health. The feedback from this questionnaire will aid in future MULTISAR initiatives.

2) Range health – transects will be completed in randomly selected pastures to determine if the range health is being maintained, increased, or decreased as recommended in HCS objectives. Once a pasture has been selected, detailed range transects and range health assessments will be completed at the original locations they were previously conducted.

3) Wildlife BMPs – Multi-species point count surveys will be completed in pastures randomly selected for detailed range transects to test results from the correlation/regression analysis. Analyses of range and wildlife relationships will help MULTISAR further refine recommended BMPs.

Data collected during the evaluation will be stored in MULTISAR's Evaluation and Monitoring Database. A report will also be completed documenting all results.

Objectives

- Evaluation of MULTSAR HCSs five years after the start of their implementation
- Conduct detailed range transects and range health assessments
- Conduct wildlife surveys in the same pastures as the detailed range transects and range health assessments are completed
- Conduct riparian health inventories where required
- Landholder questionnaire
- Populate MULTISAR Evaluation and Monitoring Database
- Report completion which includes summary and analysis of the data collected during field work and responses from the questionnaire

Desired Measures of Success

- Desired range health is occurring
- Desired riparian health is occurring
- Desired wildlife species are occurring or increasing on the site
- Recommendations within HCSs are being attempted
- Enhancements are having the desired effect when present
- MULTISAR is increasing awareness and knowledge about species at risk
- MULTISAR is beneficial to the ranching community

5.3 Monitoring Habitat Enhancements

Monitoring is the periodic collection of data to determine if activities are progressing toward accomplishing the project goals and objectives. Monitoring enhancements can help aid in the evaluation process (Margoluis and Salafsky 1998).

Monitoring habitat enhancements will allow MULTISAR staff to measure whether an HCS recommended enhancement is progressing in the direction of the desired effect. Monitoring provides the opportunity to apply corrective measures to rectify the response to management changes. Problems and corrective actions identified during monitoring can help mainstream future enhancements.

The following is a summary of the monitoring protocols and results for enhancements completed by MULTISAR to date.

5.3.1 Restoration Projects

Conversion of cropland back to native grasses can benefit a suite of species at risk. Monitoring of projects that involve native grass reseeding will be completed every year, for up to year five, as considerable time and money are spent on these types of projects. Range health assessments will be conducted at specific sites (permanent pins) throughout the reseeded field to identify seeding success and document the gradual conversion of cropland or tame pasture back to native grasses. Wildlife surveys will be conducted at points throughout the reseeded field (at least 200 m away from fence lines) in order to document any change in species composition. Information such as monthly precipitation totals and average monthly temperatures will also be recorded. Photos following MULTISAR's Photo Guidelines will be taken. Monitoring information collected will serve to guide future reseeding projects.

Objectives

- Monitor yearly
- Conduct yearly detailed range transects and range health assessments to record seeding success
- Collect yearly photo documentation
- Conduct yearly wildlife point surveys throughout the reseeded area (at least 200 m away from fence lines)
- Record monthly precipitation and average temperatures from Environment Canada

Desired Measures of Success

- Increase in the diversity of grassland birds using the reseeded area such as native species like the chestnut-collared longspur (*Calcarius ornatus*) and McCown's longspur (*Calcarius mccownii*), Sprague's pipit (*Anthus spragueii*), and long-billed curlew (*Numenius americanus*)

- ❖ Conversion of cropland/tame pasture into native grassland representative of the plant community type that grows in the same Natural Subregion and soil type
- ❖ Increase and maintain range health (based on plant community, structure, bare soil, litter and weeds present) once native grasses are established

Monitoring of a MULTISAR reseeding project was conducted in 2010, the results of which are summarized in Table 7.

Table 7. Restoration project monitoring.

Enhancement Site	Date Implemented	Target Species	November 2008		Latest Assessment 2010		Desired Effect
			Mean Dominant Species Present	%	Mean Dominant Species Present	%	
MULTISAR_7	Apr-08	Grassland Birds	Western/Northern Wheatgrass (*Agropyron smithii/ dasystachium*)	9.6	Blue Grama Grass	13.4	Yes
					Northern Wheatgrass	13.0	
			Blue Grama Grass (*Bouteloua gracilis*)	4.0	June Grass	10.9	
			June Grass (*Koelaria macrantha*)	0.5	Western Wheatgrass	6.7	
			Needle and Thread Grass (*Stipa comata*)	trace	Needle and Thread Grass	3.3	

5.3.2 Shelterbelt and Shrub Planting

Shelterbelts and shrub planting can increase nesting habitat for a variety of wildlife species such as ferruginous hawks (*Buteo regalis*) and loggerhead shrikes (*Lanius ludovicianus*), and increase forage/winter habitat for sage grouse (*Centrocercus urophasianus*), sharp-tailed grouse (*Tympanuchus phasianellus*) and pronghorn (*Antilocapra americana*). Shrubs will be monitored yearly for the first five years, in the fall, to determine establishment and growth. Selected shrubs will have each year's growth measured along select branches as well as the shrubs total height and patch size. The number of dead shrubs will also be recorded. Photos will be taken at each site to document changes visually. Documentation of browsing by wildlife or evidence of wildlife use of the area (scat) will also occur on a regular basis during the appropriate season for the priority species. Trail cameras (Reconyx©) will be used to record wildlife presence. Monthly precipitation and average temperature will also be recorded.

Objectives

- ❖ Monitor yearly (for first five years) the following:
- ❖ Measure growth on select branches as well as a total height and shrub patch size
- ❖ Record number of dead shrubs
- ❖ Document any wildlife use (% browse, scat), also through the use of trail cameras
- ❖ Record monthly precipitation and average temperatures

Desired Measures of Success

- ❖ Establishment of a healthy self-sustaining shrub community
- ❖ Documented use of site by loggerhead shrikes (nest), grouse (scat), ungulates (browse)

MULTISAR planted shrubs on two properties in the spring of 2010. These sites were monitored in the summer of 2010, the results of which are summarized in Table 8.

Table 8. Shelterbelt and shrub monitoring.

Enhancement Project	Target Species	Shrub Species Planted	# Shrubs Planted	Date Planted	Date Monitored	Latest Assessment		Desired Effects
						Survivability	Average Shrub Height	
MULTISAR_4	Loggerhead Shrike Grassland Birds	Chokecherry (*Prunus virginianus*), Thorny Buffaloberry (*Sheperdia argentea*)	400	Apr-10	Jul-10	46% Chokecherry	23.0 cm Chokecherry	Yes, Browse
						36% Thorny Buffaloberry	25.5 cm Thorny Buffaloberry	
MULTISAR_7	Sage Grouse, Pronghorn	Silver Sagebrush (*Artemesia cana*)	148	May-10	Jul-10	100% Silver Sagebrush	N/A	Yes, 100% Survival

5.3.3 Artificial Nesting Structures

Artificial structures are used by MULTISAR in areas which have potential to support raptors at risk without negatively impacting other species at risk in the area. Artificial structures include raptor nest poles and burrowing owl (*Athene cunicularia*) burrows.

A) Raptor nest poles erected by MULTISAR are aimed at attracting a pair of ferruginous hawks to the area. The pole will be monitored on a yearly basis and photos will be taken in an effort to document the first use of the site by ferruginous hawks.

B) Burrowing owl artificial burrows will be monitored yearly, with photos taken, to document use.

Objectives

- ❖ Monitor yearly: Monitor raptor nest poles until first use, then will be included in the five year evaluation; monitor artificial burrows yearly and until first use.
- ❖ Collect photos of the site

Desired Measures of Success

- ❖ Use of artificial structure by intended wildlife (ferruginous hawk or burrowing owl) or associated species

- ❖ Successful production of young

Two burrowing owl artificial burrows and two nest poles for ferruginous hawks were implemented in November 2008 and December 2007, respectively. These structures were monitored in 2010, the results of which are summarized in Table 9.

Table 9. Artificial nesting structure monitoring.

Enhancement Project	Enhancement	Target Species	Date Implemented	Site #	Evidence of Use	Species Using Structure	Desired Effect
MULTISAR_2	Two Burrowing Owl Burrows	Burrowing Owl	Nov-08	1	Inactive. Entrance remains closed for weed spraying.	N/A	N/A
MULTISAR_5(a)	Nest Pole	Ferruginous Hawk	Dec-07	1	Yes. Possible attempts at nesting. Whitewash evident on and around pole.	Swainson's Hawk observed	Yes
MULTISAR_5(b)	Nest Pole	Ferruginous Hawk	Dec-07	2	Yes. Nest on platform.	Ferruginous hawks observed acting territorial	Yes

5.3.4 Wildlife Friendly Fence Lines

All fence lines constructed under the MULTISAR project will be wildlife friendly fence lines which include a smooth double stranded bottom wire at least 18 inches off the ground to help facilitate pronghorn antelope movement. The desired top wire height is a maximum of 40 inches for ease of crossing for other ungulate species. Fence lines will be erected by a contractor or through collaboration with the landholder where MULTISAR provides the materials and the landholder installs the fence. Fence lines constructed near sharp-tailed and sage grouse leks will be at least 600 m away and may have markers (pieces of vinyl siding under sill) placed on the top wire, four feet apart, to help reduce collisions and subsequent mortality of grouse in the area (Wolfe *et al* 2009). Photos of the old fence and new fence will be taken.

Objectives

- ❖ Check fence after installation to ensure it meets wildlife friendly fence line requirements

- ❖ Check fence markers (vinyl siding) the year after installation for damage

Desired Measures of Success

- ❖ 90 percent of fence lines installed to specification.

Wildlife friendly fences were erected on three properties in 2009-2010. These fence lines were measured for accurate height of the bottom and top wires, and reflectors were placed on the middle and top wires within greater sage grouse range. The results of monitoring are summarized in Table 10.

Table 10. Wildlife friendly fence line monitoring.

Enhancement Property	Date Implemented	Target Species	Average Height of Bottom Wire (inches)	Average Height of Top Wire (inches)	Reflectors	Desired Effect
MULTISAR_9	Feb-10	Pronghorn	17.9	41.9	No	Yes
MULTISAR_5	Mar-09	Pronghorn	18.4	53.1	No	No. Fence line is not finished
MULTISAR_7	Oct-10	Pronghorn and Greater Sage Grouse	Has not been measured	Has not been measured	Yes	Unknown

5.3.5 Weed Control

Sites invaded by noxious and restricted weed species reduce health, as the invading species quickly replace the native vegetation, reducing diversity and productivity. Enhancements centered on weed control will be monitored yearly as weeds are extremely prolific, and require a quick response if the control mechanism is not impacting the weeds as expected. Sites containing weeds will be monitored and percent infestation and density distribution recorded. Sites in which bio-control agents (insects) are used should be monitored the year after they are dispersed by the same agency that released them. Photos of the site, where weed control is occurring, will be taken yearly for two years post enhancement.

Objectives

- ❖ Monitor for two years post enhancement
- ❖ Collect photos of site
- ❖ Determine if larvae of bio-control agent are present, if used, and collect photo evidence

Desired Measures of Success

- ❖ Reduction in percent and density distribution or elimination of unwanted weeds

- ❖ Containment of weeds to a specific location
- ❖ Bio-control agents are over wintering and feeding on the weeds

One property was monitored for survival of bio-control (insects) and chemical control applications occurred on two other properties in 2010. Plans for implementation of another bio-control project are planned for spring 2011. Results of these enhancement projects are summarized in Table 11.

Table 11. Weed control monitoring.

Enhancement Project	Date Implemented	2010			
		Species of Weed	Control Method	If Bio-Control used, are larvae present?	Desired Effect
MULTISAR_9	01-Jun-09	Dalmatian Toadflax (*Linaria dalmatica*)	Bio-control/Spray	Insects found and plants dying back	Yes
MULTISAR_10	01-Jun-09	Canada Thistle (*Cirsium arvense*), Hound's Tongue (*Cynoglossum officinale*), Spotted Knapweed (*Centaurea biebersteinii*), and Tall Buttercup (*Ranunculus acris*)	Delivered Restore chemical in 2010		Unknown
MULTISAR_11	01-Jun-09	Canada Thistle, Hound's Tongue, and Downy Brome (*Bromus tectorum*)	Delivered Restore chemical in 2010		Unknown
MULTISAR_8	01-Jun-09	Leafy Spurge (*Euphorbia esula*)	Will be implementing bio-control in 2011		Unknown

5.3.6 Portable Watering Units (Wetlands, Riparian)

Water improvement monitoring will occur at two levels depending on the scale of impact.

A) Portable Watering Units

Portable Watering Units are usually purchased through MULTISAR to help reduce impacts to wetlands/riparian areas and to better distribute cattle throughout the pasture. Portable watering units can attract cattle away from wetlands/riparian areas thereby improving wildlife habitat by increasing emergent vegetation, reducing erosion of the slopes and shoreline by cattle, and increasing the longevity of wetlands/riparian areas. Photos will be taken every two years at specific locations and within a week's time frame of the previous year's photos where portable watering units are being used to improve cover and reduce impact by cattle. Species

composition of emergent vegetation and wildlife observed on or in the wetland/riparian area will be recorded. Evening call surveys for northern leopard frog (*Rana pipiens*), plains spadefoot (*Spea bombifrons*), or Great Plains toad (*Bufo cognatus*) will be completed if these species aren't identified during the day. Range health assessments will be completed if the watering unit is placed outside the original impacted areas (within 100 m).

Objectives

- Monitor every two years
- Record species composition for emergent vegetation
- Record wildlife observed using wetland/riparian area
- Complete range health assessment if watering site is outside original impact area
- Take photos of wetland and enhancement
- Conduct amphibian call surveys where appropriate

Desired Measures of Success

- Established emergent vegetation community consisting of rushes (*Juncus spp.),* sedges (*Carex spp.),* cattails (*Typha latifolia*), willows (*Salix spp.*), etc.
- Increased use of wetland by amphibians and waterfowl
- Visual change in shoreline, due to increase in emergent vegetation and decreased impact by cattle
- Utilization by amphibians

Five portable watering unit enhancement sites were monitored in 2010. The results of the enhancement monitoring are summarized in Table 12.

B) Watering Sites (Uplands)

Upland watering sites are utilized to attract cattle into an area which is seldom used, in order to create heavier grazing pressure to benefit targeted species. Upland watering sites can also help decrease impacts on other wetlands and riparian areas in the same pasture. Monitoring of those sites will follow the protocol outlined in 5.3.6 (A). Upland watering sites installed to create heavier grazing will be monitored every two years and include range health assessments within 50 m of the watering site and a second one 200 m away. Range health assessments will also aid in assessing whether problem areas (weeds) are starting to occur around the upland watering site and what measures should be taken. Robel pole measurements will be taken every 10 m starting from the edge of the watering site out to 200 m in the case of drilled wells or dugouts. Measurements at these locations were chosen specifically for burrowing owls which prefer short grass (less than 10 cm) in which to nest (close to watering site) and longer grass (greater than 30 cm) to forage in (ASRD and ACA 2005). Photos will be taken to document changes.

Objectives

- Monitor every two years
- Complete two range health assessments and Robel pole measurements
- Collect photos of site
- Complete wildlife point count survey near watering site

Table 12. Portable watering unit monitoring.

Enhancement Project	Date Implemented	Date Monitored	Emergent Vegetation	Target Species	Species Observed	Desired Effect
MULTISAR_1(a)	Apr-08	Jul-10	Yes: Slough Grass (*Beckmannia syzigachne*), Spike Rush (*Juncus balticus*), Smartweed (*Polygonum spp.*), Bulrush (*Scirpus spp.*), Sedges, Marsh Hedge Nettle (*Stachys palustris*), and Dock (*Rumus spp.)*	Amphibians, Waterfowl, and Burrowing Owls	Mallard (*Anas platyrynchos*), American Widgeon (*Anas americana*), and American Coot (*Fulica Americana*)	Yes. Emergent vegetation is productive and desirable species were found using the area.
MULTISAR_1(b)	Apr-08	Jul-10	No emergent species observed	Amphibians, Waterfowl, and Burrowing Owls	None Observed	No. Unit is not in use and area is heavily impacted.
MULTISAR_8	Apr-08	Jul-10	Yes: Sedges, and Rushes	Northern Leopard Frog and Brassy Minnows (*Hybognathus hankinsoni*)	Northern Leopard Frogs	Yes. Grass and emergent vegetation is productive.
MULTISAR_5(a)	01-Apr-08	Jul-10	N/A	Amphibians, Waterfowl, and Burrowing Owls	None observed.	No. Unit is not in use.
MULTISAR_5(b)	01-Apr-08	Jul-10	N/A	Amphibians, Waterfowl, and Burrowing Owls	None observed.	No. Unit is not in use.

Objectives

- Monitor every two years
- Complete two range health assessments and Robel pole measurements
- Collect photos of site
- Complete wildlife point count survey near watering site

Desired Measures of Success

- Shorter grass around watering sites with taller grass 200 m out
- Burrowing owl observed using the area
- Improved vegetative cover and riparian health around wetlands and riparian areas within the same pasture
- Increase in prey species for raptors or prairie rattlesnake

Baseline range health assessments were recorded for 7 upland watering sites on 4 different enhancement properties in 2010. The range health and detailed transect locations were marked with permanent pins and photographed so they can be re-evaluated in the future to determine effects of the enhancement on range health. The effects of these enhancement baseline inventories are summarized in Table 13.

Table 13. Upland watering site enhancement monitoring.

Enhancement Site	Target Species	Date Implemented	Baseline Range Health Inventory 2010					Desired Effects
			Date of Baseline	Baseline Range Health (50 m)	Avg. Robel Pole Height 50 (m)	Baseline Range Health (200 m)	Avg. Robel Pole Height 200 (m)	
MULTISAR_5(a)	Burrowing Owl	Apr-08	Jul-10	High Healthy with Problems	0.0188	Very Healthy	0.0188	More information required
MULTISAR_5(b)	Burrowing Owl	Apr-08	Jul-10	Very Healthy	0.203	N/A	N/A	
MULTISAR_5(c)	Burrowing Owl	Apr-08	Jul-10	Low Healthy with Problems	0.069	Healthy	N/A	
MULTISAR_1	Burrowing Owl Prairie Rattlesnake (*Crotalus viridis viridis*) Loggerhead Shrike	Jun-10	May-10	Healthy	N/A	High Healthy with Problems	0.028	
MULTISAR_8	Burrowing Owl Grassland Birds Northern Leopard Frog	May-10	Jul-10	Low Healthy with Problems	0.006	High Healthy with Problems	0.025	
MULTISAR_9(a)	Ferruginous Hawk Grassland Birds (deferred grazing) Eastslope Sculpin (*Cottus sp.*)	Aug-10	Jul-10	Very Healthy	N/A	Healthy	N/A	

Enhancement Site	Target Species	Date Implemented	Baseline Range Health Inventory 2010					Desired Effects
			Date of Baseline	Baseline Range Health (50 m)	Avg. Robel Pole Height 50 (m)	Baseline Range Health (200 m)	Avg. Robel Pole Height 200 (m)	
MULTISAR_9(b)	Grassland Birds (deferred grazing) Ferruginous Hawk	Aug-10	Jul-10	High Healthy with Problems	N/A	High Healthy with Problems	N/A	

5.3.7 Tree and Shrub Protection

Trees and shrubs which have been or have the potential to be heavily impacted by cattle are generally recommended to have fence lines or corral panels placed around them to help prevent their gradual destruction and subsequent loss. Trees, especially lone cottonwood trees, in pastures that can be used as nesting sites by ferruginous hawks should also be protected. Sites in which the landholder implements the recommendations will be monitored every three years with photos taken to document the reduced impact of cattle on trees or shrubs. Raptors observed using the site will also be documented.

Objectives

- Monitor every three years
- Collect photos of site
- Document raptor use of the site

Desired Measures of Success

- Tree or shrub is protected
- Increased vitality of site such as new growth (suckering or seedling)
- Use of site by desired species (i.e. ferruginous hawk)

Structures to protect a lone tree were erected in June 2009 and were monitored for effectiveness in 2010. The results of monitoring are summarized in Table 14.

Table 14. Tree and shrub protection enhancement monitoring.

Enhancement Project	Date Implemented	Date Monitored	Target Species	Evidence of Use by Cattle and Target Species	Desired Effect
MULTISAR_4	Jun-09	Jul-10	Ferruginous Hawk	New growth detected; suckering	Yes, New growth and tree is protected

5.3.8 Wildlife Summary

In 2010, MULTISAR monitored 27 distinct enhancement projects that were implemented on 10 different properties as a result of HCS recommendations. A summary of the targeted species for these enhancement projects are summarized in Table 15.

Table 15. Number of enhancement projects for each targeted wildlife species.

Target Wildlife Species	Number of Enhancements Currently Implemented
Burrowing Owl	10
Amphibians	6
Ferruginous Hawk	5
Grassland Birds	5
Pronghorn	4
Waterfowl	4
Loggerhead Shrike	2
Sage Grouse	2
Fish	2
Reptiles	1

5.4 Future Direction

In 2011-2012 MULTISAR will continue to monitor enhancement projects to determine if desired effects are occurring. Thirteen enhancement projects have been identified for monitoring in 2011 (Table 16).

Table 16. Monitoring of enhancement projects in 2011.

Enhancement Type	Enhancement Property	Comments
Portable Watering Units	MULTISAR_1	Watering units were not in use in 2010
Artificial Structures	MULTISAR_2	Two burrowing owl burrows - monitor yearly
Reseed Project	MULTISAR_2	Monitor yearly
Shrub Planting	MULTISAR_4	Monitor yearly
Artificial Structures	MULTISAR_5	One vacant ferruginous hawk nest pole - monitor yearly
Portable Watering Units	MULTISAR_5	Watering units were not in use in 2010
Portable Watering Units	MULTISAR_5	Watering units were not in use in 2010
Reseed Project	MULTISAR_7	Monitor yearly
Shrub Planting	MULTISAR_7	Monitor yearly
Wildlife Friendly Fence Line	MULTISAR_7	Measure height of top and bottom wires
Weed Control	MULTISAR_9	Monitor for two years post-enhancement
Weed Control	MULTISAR_10	Monitor for two years post-enhancement
Weed Control	MULTISAR_11	Monitor for two years post-enhancement

MULTISAR will also focus on evaluation of the program by returning to ranches that have participated with the program for 5 years. Evaluations will include range health and wildlife surveys to compare with data collected previously and to determine whether beneficial management practices implemented in specific fields have benefited targeted wildlife species. A questionnaire will also be completed with the landholder to determine how they felt about the program and how it impacted their operations.

5.5 Literature Cited

Alberta Sustainable Resource Development (ASRD) and Alberta Conservation Association (ACA). 2005. Status of the burrowing owl (*Athene cunicularia*) in Alberta: update 2005. Alberta Sustainable Resource Development, Wildlife Status Report No.11 (Update 2005), Edmonton, AB. 28 pp.

Margoluis, R. and N. Salafsky. 1998. Measures of success: designing, managing, and monitoring conservation and development projects. Island Press. Washington, D.C., USA.

MEERA. 2009. Evaluation: What is it and why do it? Online: http://meera.snre.umich.edu/. Accessed on August 8, 2009.

Wolfe, D. H., M. A. Patten, S. K. Sherrod. 2009. Reducing grouse collision mortality by marking fences (Oklahoma). Ecological Restoration 27 (2): 141-143.

6.0 MULTISAR AND THE RECOVERY OF ALBERTA SPECIES AT RISK

Darryl Jarina and Kristen Rumbolt, Prairie Conservation Forum, Lethbridge, Alberta

6.1 Introduction

The MULTISAR project provides conservation of multiple species at risk (SAR), and associated fish and wildlife, within the Grassland Natural Region (GNR) of Alberta. A key component of the MULTISAR project is to implement recovery actions for Endangered and Threatened species in the GNR. To better understand how MULTISAR is addressing the recovery of species at risk, a review of existing Provincial and National Recovery Plans was completed. This review included the:

- Burrowing owl (*Athene cunicularia*) (Alberta Burrowing Owl Recovery Team 2005)
- Ferruginous hawk (*Buteo regalis*) (Alberta Ferruginous Hawk Recovery Team 2009)
- Greater sage grouse (*Centrocercuc urophasianus*) (Alberta Sage Grouse Recovery Action Group 2005)
- Northern leopard frog (*Rana pipiens*) (Alberta Northern Leopard Frog Recovery Team 2005)
- Short-horned lizard (*Phrynosoma douglasii*) (ESCC 2004a)
- Swift fox (*Vulpus vulpus*) (Alberta Swift Fox Recovery Team 2007)
- St. Mary's/Eastslope sculpin (*Cottus bairdi*) (ESCC 2004b)
- Stonecat (*Noturus flavus*) (ESCC 2004c)
- Western silvery minnow (*Hybognathus argyritis*) (Alberta Western Silvery Minnow Recovery Team 2007)
- Soapweed (*Yucca glauca*) and yucca moth (*Tegeticula yuccasella*) (Alberta Soapweed and Yucca Moth Recovery Team 2006)

Additionally, provincial *Species of Special Concern* Management Plans were also reviewed.

- Harlequin duck (*Histrionicus histrionicus*) (Alberta Sustainable Resource Development 2010a)
- Long-billed curlew (*Numenius americanus*) (Alberta Sustainable Resource Development 2010b)
- Sprague's pipit (*Anthus spragueii*) (Alberta Sustainable Resource Development 2010c)
- Western blueflag (*Iris missouriensis*) (Canada Western Blueflag Maintenance/Recovery Team 2002)

For each species, a review of the recovery and management actions that have been addressed by MUTLISAR since the program's inception in 2002 or will be addressed by MULTISAR in the future was conducted. The following details how MULTISAR addresses the recovery actions and provides measures of success.

6.2 Burrowing Owl

6.2.1 Recovery Strategy: Rangeland Management and Stewardship

Determine beneficial management practices (BMPs) and encourage stewardship using the best available knowledge to enhance the quality of burrowing owl habitat and increase burrowing owl densities.

Table 17. MULTISAR's contribution to the implementation of Rangeland Management and Stewardship actions identified in the Burrowing Owl Recovery Plan (Burrowing Owl Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1. Continue to promote public reporting system to identify occupied sites for burrowing owls.	• All information collected through the Habitat Conservation Strategy (HCS) and Species at Risk Conservation (SARC) Plan program has been entered into the Fish and Wildlife Management Information System (FWMIS).	• Since 2002, MULTISAR has recorded and submitted 49 burrowing owl sightings to FWMIS.
2. Promote habitat conservation programs in support of private landholders.	• MULTISAR is a conservation program designed for landholders with SAR on their land. • MULITSAR works cooperatively with other non-government organizations to support private landholders.	• MULTISAR has directly contacted over 300 landholders about the species.
3. Work with landholders and other stakeholders to develop and implement BMPs for burrowing owls.	• Developed BMPs for the species in 2004. • Implements BMPs in the Milk River Basin through the HCS program. • Implements BMPs throughout the GNR through the SARC Plan program.	• Developed BMPs for the species which were adopted by the Alberta Recovery Team as the Burrowing Owl BMPs. • Distributed Burrowing Animals BMP information via brochures or within reports to approximately 50 landholders throughout the GNR. • Recommended burrowing owl BMPs on over 64,500 acres on HCS properties and 16,500 acres on SARC Plan properties.
4. Ensure adequate numbers and distribution of nest burrows	• Developed BMPs for keystone species. • Monitors ground squirrel populations throughout	• Provided management recommendations

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
(badgers and ground squirrels).	the GNR and through the HCS program. • Encourages landholders to provide habitat for keystone species through the HCS and SARC Plan programs.	specifically for keystone species on 78,000 acres. • MULTISAR team has helped influence landholders to maintain over 205,000 acres of native prairie habitat for use by keystone species. • Created 2 artificial nest burrows for burrowing owls to compensate for the lack of keystone species in these areas.
5. Ensure adequate habitat to support prey populations.	• Developed BMPs for keystone species. • Encourages landholders to provide habitat for keystone species through the HCS and SARC Plan programs.	• Provided management recommendations specifically for keystone species on 78,000 acres. • MULTISAR team has helped influence landholders to maintain over 205,000 acres of native prairie habitat for use by keystone species.
5.1 Inform land managers of burrowing owls' preference for a mosaic of range regimes.	The MULTISAR project promotes a mosaic of range regimes and grass heights through: 1. MULTISAR BMPs 2. HCSs 3. SARC Plans 4. MULTISAR's Education Outreach and Awareness Program	• By March 2011, the HCS program has been active on 238,821 acres and 139,000 acres through the SARC Plan program. • Distributed 50 burrowing animals BMPs via brochures or within reports.
6. Conserve and manage habitat for a diversity of species including burrowing owls.	• MULTISAR is a multi-species program that encourages management of habitat for over 17 species at risk.	• 17 HCSs and 62 SARC Plans have been completed as of March 2011.

6.2.2 Recovery Strategy: Retaining or Increasing Habitat

Develop and encourage the implementation of policies and programs that retain or increase the amount of burrowing owl habitat.

Table 18. MULTISAR's contribution to the implementation of the Retaining and Increasing Habitat actions identified in the Burrowing Owl Recovery Plan (Burrowing Owl Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1.0 Develop and encourage incentives for landholders and others to conserve burrowing owls. 1.1 Identify and recommend land use policy and practices that encourage enhancements of burrowing owl habitat or minimize impacts of industrial developments. 1.3 Encourage the use of guidelines and other provisions to buffer owl nests from activities of industry to reduce the loss of owl habitat and reduce disturbance to owls.	• Incentives are provided to landholders as free assessments through the HCS and SARC Plan program and the implementation and cost sharing of habitat improvement projects for rangelands. • Information on the effects of industrial developments is included in all HCSs and SARC Plans. • Developed and updated an Industrial Guidelines brochure for landholders. • Working on developing Protective Notations (PNTs) on all HCS lands.	• More than 15 habitat improvements developed through the MULTISAR project using incentives from other NGOs and existing government programs. • Over 300 landholders have been given information on minimizing the impact of industrial developments.
1.2 Examine agricultural programs to ensure that they conserve burrowing owls, other prairie wildlife and their natural habitats, as well as modify programs to encourage maintenance of native prairie and the restoration of cropland to pasture. Balance the needs of burrowing owls, sound range management and the needs of the landholder and other wildlife. 3. Develop programs to manage burrowing owl habitat on land controlled by all levels of government. 5. Increase the area and	• Works on both private and public land. • Uses the concept of "natural variation" in range management. • Promotes habitat connectivity. • Promotes re-seeding projects in marginal areas surrounded by native prairie. • MULTISAR is partnered with Alberta Sustainable Resource Development (ASRD), Alberta Conservation Association (ACA), and Prairie Conservation Forum (PCF) and meets federal requirements of the Habitat Stewardship Program.	• 64,500 of acres conserved for burrowing owls through the HCS program and 16,500 acres conserved through SARC Plans. • 230 acres have been re-seeded to native cover. An additional 800 acres are in the development phase for 2011. • Over 205,000 acres are currently being maintained as native prairie habitats by MULTISAR. • Maintained successful partnerships between agencies.

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
enhance the quality of burrowing owl habitat through increasing grassland patch size and reducing grassland fragmentation.		
2. Ensure integrated land management planning processes include burrowing owl conservation issues. 4.1 Identify essential habitat that must be managed to achieve population goals. 4.3 Identify and map suitable and potentially suitable burrowing owl habitat.	• Developed Habitat Suitability Index (HSI) model for the burrowing owl. • Assisted in developing a user friendly tool to identify areas of high priority for the burrowing owl. • HCS program identifies key habitat for conservation of burrowing owls and other species at risk and develops an integrated plan balancing the needs of the species with the other land users, including the rancher.	• MULTISAR developed the HSI model to identify habitat for the species on the landscape. • HSI tool available for use by all prairie region biologists and is available for download by the public on the ASRD website. • 17 HCSs have been completed as of March 2011.

6.2.3 Recovery Strategy: Public Education and Awareness

Increase support of the burrowing owl and prairie conservation through public education and awareness program.

Table 19. MULTISAR's contribution to the implementation of Public Education and Awareness actions identified in the Burrowing Owl Recovery Plan (Burrowing Owl Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1. Increase general public awareness of native rangelands, the burrowing owl and related prairie conservation issues through existing programs. 2. Use information and extension to encourage habitat conservation and develop a public awareness of factors affecting burrowing owls. 3. Inform landholders of incentive programs and conservation partnerships available.	• Develops educational materials and presentations, including the At Home on the Range brochure for living with Alberta's species at risk. • Informs landholders of incentive programs through the biannual *Grassland Gazette* and through communication with landholders through the SARC Plan program. • Developed a youth education program with the PCF and Alberta Parks.	• 50 BMPs via brochures or within reports distributed to private landholders. • Have distributed over 5000 copies of the At Home on the Range brochure. • 62 SARC Plans completed. • 45 presentations/public meetings held for private landholders, government agencies, watershed groups and school groups by MULTISAR.

6.2.4 Recovery Strategy: Population Monitoring

Monitor populations of burrowing owls.

Table 20. MULTISAR's contribution to the implementation of Population Monitoring actions identified in the Burrowing Owl Recovery Plan (Burrowing Owl Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1. Develop and maintain a database of annual population reports from burrowing owl nest sites to monitor annual population and distribution changes.	• All information collected through the HCS and SARC Plan programs has been entered into FWMIS.	• 49 sightings entered into FWMIS since 2002 by MULTISAR.

6.2.5 Burrowing Owl Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Burrowing Owl Recovery Plan. MULTISAR is a valuable tool in achieving action objectives of the recovery plan; in particular the objectives pertaining to landholder education, development of tools, such as the burrowing owl BMPs, maintenance of native prairie habitat, retention of burrows and keystone species, and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Burrowing Owl Recovery Plan.

6.3 Ferruginous Hawk

6.3.1 Recovery Strategy: Habitat Management

Table 21. MULTISAR's contribution to the implementation of Habitat Management actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1.3. Information and education encouraging retention of trees for nest sites.	• Provides management information to landholders through the HCS and SARC Plan programs. • Maintains native habitat, including trees used for nesting. • Developed Raptor BMP brochure for landholder use. • Erects nest poles where historic nests have fallen down. • Promotes the importance of ferruginous hawks to landholders, especially for pest control.	• 55,000 acres through the HCS program are being managed for ferruginous hawks. • Distributed 80 Raptor BMP brochures to landholders. • 3 nest poles have been installed on MULTISAR co-operators' land.

1.6. Financial incentives to producers for providing SAR habitat.	• Development of free HCSs and SARC Plans. • Installed free raptor nesting poles at key locations.	• Completed 17 HCSs and 62 SARC Plans as of March 2011, all of which have highlighted the benefits of providing habitat for ferruginous hawks. • Have erected 3 nest poles for ferruginous hawks.
4.2. BMPs for ferruginous hawk.	• Developed and implemented species BMPs, including Raptor and Industrial BMPs brochures, as well as a BMP brochure for the ferruginous hawk's main prey, the Richardson's ground squirrel. • Provides BMPs to landholders through the HCS and SARC Plan programs.	• Distributed 80 Raptor BMP brochures, 80 Industrial BMP brochures and 30 Ground Squirrel BMP brochures to date. • Completed 17 HCSs and 62 SARC Plans, all of which have recommended beneficial management practices for raptors.

6.3.2 Recovery Strategy: Reduction of Human Disturbances

Table 22. MULTISAR's contribution to the implementation of the Reduction of Human Disturbance actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
2.1. Use of Prairie Sensitive Species Guidelines.	• Developed Industrial Guideline brochure for SARs. • HCS reports and SARC Plans include industrial guidelines for ferruginous hawks.	• Distributed 80 Industrial Guideline brochures to landholders. • By March of 2011, MULTISAR will have completed 17 HCSs and 62 SARC Plans, all of which have provided industrial guidelines for raptors, including ferruginous hawks.

6.3.3 Recovery Strategy: Reduction of Human Caused Mortality

Table 23. MULTISAR's contribution to the implementation of the Reduction of Human Caused Mortality actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
3.0. Information and education programs to discourage persecution of species at risk.	• Promotes the importance of species at risk to landholders for pest control. • Works with landholders to convey that species at risk, including the ferruginous hawk, are beneficial, as opposed to detrimental, to their operation. • Develops educational material and presentations including a youth education presentation on "Raptors at Risk" and the At Home on the Range brochure for living with Alberta's species at risk.	• MULTISAR has contacted over 1200 landholders since 2002, distributed over 5000 copies of the At Home on the Range, Living with Species at Risk Guide, and completed 62 SARC plans, all of which explain the benefits of raptors to landholders. • 54 presentations/public meetings held for private landholders, government agencies, watershed groups and school groups by MULTISAR.

6.3.4 Recovery Strategy: Population Monitoring and Research

Table 24. MULTISAR's contribution to the implementation of Population Monitoring and Research actions identified in the Ferruginous Hawk Recovery Plan (Ferruginous Hawk Recovery Team 2009).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
5.1 and 7.1. Population monitoring and inventories every 5 years.	• Participates in the 5 year ferruginous hawk population inventory and annual trend monitoring surveys. • Records all ferruginous hawk sightings and nest locations and submits observations into FWMIS.	• Complete approximately 15 ferruginous hawk quadrants each year and 35 quadrants in the provincial monitoring years. • In the 2010 provincial monitoring year, completed 61 ferruginous hawk quadrants and The 2010 Ferruginous Hawk Inventory and Population Analysis report. • Over 650 ferruginous hawk observations have been entered into FWMIS by

		MULTISAR since 2002.
7.3. Prey monitoring and research (including annual ground squirrel trend surveys).	• Monitored ground squirrel populations throughout the GNR. • Encourages landholders to tolerate ground squirrel populations. • Developed BMP brochure for the Richardson's ground squirrel.	• Assisted in completing 42 transects as part of the ground squirrel monitoring program. • 78,000 acres have been recommended to be managed in consideration of Richardson's ground squirrels. • Influenced over 205,000 acres of native prairie habitat for use by keystone species. • MULTISAR has distributed approximately 30 Ground Squirrel and 30 Burrowing Animals BMP brochures to landholders.
7.5: Research on range management and ferruginous hawks.	• Conducts range health assessments on grasslands through the HCS program.	• Conducted range health assessments on 17 HCS properties covering an area of approximately 238,821 acres.
7.8: Monitoring of ferruginous hawk population health.	• Participates in the 5 year ferruginous hawk population inventory and annual trend monitoring surveys. • Records all ferruginous hawk sightings and nest locations and submits observations into FWMIS.	• Completes approximately 15 ferruginous hawk quadrants each year and 35 quadrants in the provincial monitoring years. • In the 2010 provincial monitoring year, completed 61 ferruginous hawk quadrants and The 2010 Ferruginous Hawk Inventory and Population Analysis report. • Over 650 ferruginous hawk observations have been entered into FWMIS by MULTISAR since 2002.

6.3.5 Ferruginous Hawk Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Ferruginous Hawk Recovery Plan. In particular, MULTISAR is key to achieving objectives related to landholder education, influencing the maintenance of native prairie habitat, retention of nest sites and keystone species and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Ferruginous Hawk Recovery Plan.

6.4 Greater Sage Grouse

6.4.1 Recovery Strategy: Goal 1

Enhance and maintain habitat for sage grouse to satisfy life cycle requirements in support of a viable population within its remaining historical range.

Table 25. MULTISAR's contribution to the implementation of Enhancement and Maintenance of Habitat actions identified in the Greater Sage Grouse Recovery Plan (Alberta Greater Sage Grouse Recovery Action Group 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1.1 Protect known current and historical lek sites and maintain or enhance effectiveness of lek and adjacent potential essential habitat. (federal strategy) Conduct annual surveys	• All sage grouse sightings are entered into FWMIS for consideration in industrial or other developments. • The HCS program encourages habitat protection in and around active sage grouse leks.	• MULTISAR has participated in the annual lek counts since 2005. • 70,000 acres are managed specifically for sage grouse. 27, 283 of acres of identified Critical Habitat are managed under a MULTISAR plan.
1.2 Create net increase in brooding, rearing and wintering habitat.	• Currently MULTISAR is working on restoration projects to return cultivated lands back to native grasslands in sage grouse range using local species that include sagebrush.	• So far 140 acres have been reclaimed in sage grouse range with another 800 acres planned for 2011. • All areas are identified as sage grouse Critical Habitat.
1.3 Manage for appropriate range health for sage grouse on grazing leases as determined by Alberta Public Lands and Forests Division.	• Range health assessments are completed for all HCSs. • Range and wildlife analyses are completed for each HCS and take into consideration sage grouse within their range.	• Range health assessments and vegetation inventories have been conducted through 4 HCSs on over 70,000 acres in sage grouse range, including 27, 283 acres in sage grouse Critical Habitat.
1.4 Encourage management for	• Where sage grouse are present on HCS co-	• By March 2011, 4 HCSs

appropriate range health for sage-grouse needs on private lands.	operators' lands, MULTISAR will make appropriate range management and industrial recommendations to benefit the species.	have been completed that directly target management of habitat for sage grouse.
1.5 Restore or enhance habitat quality through appropriate range management practices	• Currently MULTISAR is working on restoration projects to return cultivated lands back to native grasslands in sage grouse range using local species that include sagebrush.	• So far 140 acres have been reclaimed in sage grouse range with another 800 acres planned for 2011. • All areas are identified as sage grouse Critical Habitat.

6.4.2 Greater Sage Grouse Summary

MULTISAR continues to play a role in the recovery of greater sage grouse in Alberta. Within the Recovery Plan almost all actions where Alberta Fish and Wildlife or Alberta Public Lands are listed as the lead, MULTISAR is involved. This includes habitat and species monitoring, implementation of BMPs within Critical Habitat, and education. MULTISAR will continue to assist with the recovery of sage grouse in Alberta.

6.5 Northern Leopard Frog

6.5.1 Recovery Strategy: Population and Habitat Monitoring

Table 26. MULTISAR's contribution to the implementation of Population and Habitat Monitoring actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1.1. Design and complete surveys in 2005 of all known northern leopard frog sites.	• MULTISAR participated in the 2005 northern leopard frog inventory.	• MULTISAR completed inventories at 32 sites.
1.3. Conduct annual spring inventories to identify specific breeding sites.	• MULTISAR has inventoried key areas of the Milk River Basin for evidence of breeding, primarily through the HCS and SARC Plan programs. • MULTISAR conducts annual spring inventories along a creek where northern leopard frogs are known to breed, as identified through a HCS.	• A total of 36 sites have been monitored by MULTISAR. • One of the HCS sites MULTISAR surveyed was used to re-introduce northern leopard frogs into other locations in 2005 and in 2008.
1.4. Conduct targeted surveys each year to search for previously unknown frog populations in areas where information indicates possible presence of northern leopard	• All water bodies with the potential as northern leopard frog habitat are identified and surveyed for the species during each new HCS.	• One population that was originally recorded as declining has been found to be a productive population through MULTISAR surveys.

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
frog.		

6.5.2 Recovery Strategy: Habitat Monitoring and Protection

Table 27. MULTISAR's contribution to the implementation of Habitat Monitoring and Protection actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
3.3. Make contact with landholders on private/leased land that support northern leopard frog populations.	• The MULTISAR education and outreach program provides landholders with information on northern leopard frogs, including: ▪ the importance of maintaining habitat for the northern leopard frog ▪ what individual landholders can do to help SAR, including the northern leopard frog	• Developed and distributed over 80 copies of MULTISAR's BMP brochure for wetland species to landholders in the GNR.
3.4. Direct management of sites to alleviate threats through cooperative agreements with landholders or other initiatives.	• Developed BMPs for the species to provide to landholders. • MULTISAR helps implement BMPs through the HCS and SARC Plan programs. • Signs agreements with HCS landholders to help ensure sound management of northern leopard frog habitat.	• 3 creeks and their adjacent wetlands are being managed for northern leopard frogs through the MULTISAR HCS and SARC Plan program. • Installed a portable watering system and a pipeline on a HCS co-operator's land to help reduce impact on a creek supporting a population of northern leopard frogs. • Helped facilitate the installation of 2 off-stream watering units to help reduce impact on another creek, an area supporting northern leopard frogs.

6.5.3 Recovery Strategy: Information and Outreach

Table 28. MULTISAR's contribution to the implementation of Information and Outreach actions identified in the Northern Leopard Frog Recovery Plan (Alberta Northern Leopard Frog Recovery Team 2005).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
4.4. Provide information on leopard frog related topics to technical and non-technical audiences through presentations, signage and other mechanisms.	• Developed and distributed wetland BMP brochures. • Provided information through presentations, public meetings, and school field trips.	• Distributed 80 wetland BMP brochures to landholders. • Gave 37 presentations/public meetings to private landholders, school groups, government agencies, watershed groups. • Led 3 tours of a northern leopard frog re-introduction site with school groups. • Developed and erected 3 interpretative signs on the northern leopard frog at a reintroduction site.

6.5.4 Northern Leopard Frog Summary

MULTISAR has contributed to the recovery of the northern leopard frog through three key actions, monitoring, direct management of habitat and education and awareness. The MULTISAR project plans to continue to assist the recovery of this species through these actions.

6.6 Swift Fox

6.6.1 Recovery Strategy: Goal 1.0

Enhance and maintain habitat for swift foxes to satisfy life cycle requirements.

Table 29. MULTISAR's contribution to the implementation of the Enhancement and Maintenance of Habitat actions identified in the Swift Fox Recovery Plan (Alberta Swift Fox Recovery Team 2007).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
1.1. Place protections on all known current swift fox dens and eliminate disturbance of known den sites by 2009.	• MULTISAR contributes data to FWMIS through the HCS and SARC Plan programs.	• Entered 3 den sites into FWMIS.
1.3. Increase habitat area protected by stewardship	• MULTISAR encourages voluntary stewardship	• The HCS program is

providing for a sustainable ranching industry and high quality habitat by 2011.	particularly within its HCS program.	currently working on over 157,000 acres in swift fox range.

6.6.2 Recovery Strategy: Goal 4.0

Communicate information about swift foxes to land managers, industry, trappers, recreational users and other relevant parties in the areas for the purpose of fostering stewardship of the species and its habitat.

Table 30. MULTISAR's contribution to the implementation of Communication of Information actions identified in the Swift Fox Recovery Plan (Alberta Swift Fox Recovery Team 2007).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
4.1. Develop and disseminate an information package for outreach and education aimed at land managers, industry, trappers and recreational users by 2008.	• Developed Burrowing Animal BMP brochure. • Developed At Home on the Range: Living with Alberta's Prairie Species At Risk Guide, which provides information on the swift fox.	• Over 5000 At Home on the Range: Living with Alberta's Prairie Species at Risk Guides have been distributed. • 50 Burrowing Animal BMPs distributed via brochures or within reports.
4.2. Contact all relevant stakeholders to identify conservation and stewardship opportunities for swift foxes by 2009.	• MULTISAR works with several ranchers within swift fox range and have conveyed the importance of the species.	• MULTISAR has worked directly with 3 landowners with known occurrences through HCSs.
4.3. Integrate swift fox biology and conservation information, along with other SAR and prairie conservation information, into local and provincial school curricula by 2008.	• Developed a youth education program for species at risk.	• MULTISAR has completed 35 school presentations.
4.4. Disseminate information regarding Alberta SAR program illustrating potential benefits of stewardship activities for landowners by 2007.	• MULTISAR is working to help landholders benefit from SAR. This is achieved through partnerships, education about sustainable ranching practices.	• Since 2002 MULTISAR has directly contacted over 1200 landholders. • Over 5000 At Home on the Range: Living with Alberta's Prairie Species at Risk have been distributed to landholders and land managers.

6.6.3 Swift Fox Summary

MULTISAR is contributing to many of the action items listed in the swift fox recovery plan and has even been listed in the Recovery Plan under several actions as a means of achieving an objective. This is positive as it shows MULTISAR's ability to work as a tool for SAR in Alberta's GNR.

6.7 St. Mary's/Eastslope Sculpin, Stonecat and Western Silvery Minnow

6.7.1 Recovery Strategy: Education and Outreach

Table 31. MULTISAR's contribution to the implementation of Education and Outreach actions identified in the Western Silvery Minnow Recovery Plan (Alberta Western Silvery Minnow Recovery Team 2007).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
E1. Improve awareness of the species.	• MULTISAR has and will continue to inform private landholders bordering the Milk and North Milk Rivers of the existence and importance of the three species. • HCSs and SARC Plans have been completed for landholders along the Milk and North Milk Rivers.	• Met with over 185 landholders in the Milk River area. • Worked with 10 landholders through the SARC Plan and HCS programs who directly border the Milk and North Milk Rivers.
E2. Encourage stakeholder participation.	• MULTISAR completes HCSs and SARC Plans in the Milk River area and involves the landholder in developing stewardship approaches on their land. • MULTISAR works with other stakeholders such as Cows & Fish and the Milk River Watershed Council Canada.	• 7 HCSs and 3 SARC Plans have been completed for landholders bordering the Milk and North Milk Rivers. • MULTISAR attends the Milk River Watershed Council annual general meetings and sits on their research team.
E4. Discourage species introduction.	• MULTISAR has developed a Wetland BMP brochure which explains the issues related to the introduction of non-native fish to water bodies.	• Have distributed over 80 copies of the Wetland BMP brochure to landholders.

6.7.2 Summary

The St. Mary's/Eastslope sculpin, stonecat and the western silvery minnow are three fishes that are being addressed through the Milk River Basin Three Fishes Recovery Team. Formal recovery plans have not yet been developed for the St. Mary's/Eastslope sculpin and the stonecat. However, MULTISAR assisted in funding preliminary research

on these species in 2002-2003 and 2005-2006. The information collected during these inventories is being used by the team to determine what habitats are important to these species, where they occur with in the Milk River and population estimates. MULTISAR plans to continue supporting the recovery team through these or other initiatives as funding allows. MULTISAR is also focused on voluntary stewardship initiatives and will continue to promote appropriate BMPs in the Milk River Basin to protect the rivers and fish within it.

6.8 Short-horned lizard

Currently, there is not a recovery plan for short-horned lizard in Alberta. An Initial Conservation Action Statement (ICAS) has been submitted to the Minister of Sustainable Resource Development based on recommendations from the Endangered Species Conservation Committee (ESCC). Within this ICAS, the ESCC recommended the following initial conservation responses:

1. Establish a legal designation of "Endangered" for the short horned lizard within *Alberta Wildlife Regulation* (AR 143/97).
2. Preparation of a recovery plan by ASRD.
3. Establish a Recovery Team with a broad range of stakeholders. May include representatives from ASRD – Fish and Wildlife, Public Lands and Forestry Divisions, Alberta Agriculture Food and Rural Development, oil and gas industry, mining industry, local grazing community, municipalities and Alberta conservation groups.
4. ASRD to initiate studies and develop standardized surveying methodology and regime.
5. Locate sufficient new resources for population monitoring and assessment and recovery planning effort.

Presently, when appropriate habitat is observed on HCS co-operators' lands, MULTISAR surveys for short-horned lizards. Since 2002, 17 lizards have been observed on such lands. The development of BMPs for short-horned lizards in Alberta is not included in the ICAS, however, in 2004, the Beneficial Management Practices for the Milk River Basin, Alberta document was developed for MULTISAR and includes general, industrial and grazing based BMPs applicable to short-horned lizards.

6.9 Harlequin Duck

Table 32. MULTISAR's contribution to the implementation of recovery actions identified in the Harlequin Duck Conservation Management Plan (ASRD 2010a).

Actions as Identified in the Recovery Plan	MULTISAR's Contribution	Measure of Success
3.1. Inventory and Monitoring.	• MULTISAR contributes to the spring and late summer harlequin duck surveys in the Oldman/Livingston drainages and the Castle/Carbondale drainages.	• Involved in harlequin duck trend surveys since 2002. • Documented and entered 95 observations into the FWMIS database.

6.10 Long-billed Curlew

Table 33. MULTISAR's contribution to the implementation of recovery actions identified in the Long-billed Curlew Conservation Management Plan (ASRD 2010b).

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
Action Item: Inventory and monitoring.	• Inventories areas of suitable habitat through its HCS and SARC plan programs. • Records all observations and enters information into FWMIS.	• Surveyed 238,821 acres through the HCS program since 2002. • Participated in the annual provincial monitoring survey between 2002-2007. • Participated in the International Census between 2005-2007. • Over 350 observations have been entered into FWMIS by MULTISAR.
Action Item: Habitat management.	• Provides information for landholders and implements BMPs through the HCS and SARC Plan programs. • Developed BMP brochure for grassland birds. • Re-seeding marginal cropland to native grassland. • Developed a Habitat Suitability Index model and assisted in developing a user friendly search tool to identify areas of high priority for the long-billed curlew.	• Has helped maintain and manage over 205,000 acres of native prairie for grassland birds. • Has distributed over 80 BMP brochures for grassland birds to landholders. • 230 acres of marginal cropland has been re-seeded back to native grasslands, with another 800 acres scheduled for re-seeding in 2011.

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
Action Item: Education and communication.	• Developed BMP brochure for grassland birds for landholder use. • Provides information for landholders through the HCS and SARC plan programs. • Provides information through public and school presentations. • Developed the brochure At Home on the Range: Living with Alberta's Species at Risk that discusses the habitat needs of the long-billed curlew and grassland birds in general.	• Has distributed over 80 BMP brochures for grassland birds to landholders. • By March 2011, will have completed 17 HCSs and 62 SARC plans, all of which have recommended maintaining native grasslands for grassland birds. • 45 presentations/public meetings held for private landholders, government agencies, and school groups by MULTISAR. • Distributed over 5000 copies of the At Home on the Range brochure

6.10.1 Long-billed Curlew Summary

MULTISAR has contributed to the recovery of the long-billed curlew through three key actions; inventories, the maintenance of habitat, and through education and communication with the public. MULTISAR plans to continue to assist the recovery team and the recovery efforts of this species through the delivery of the MULTISAR project in priority areas that include the long-billed curlew.

6.11 Sprague's Pipit

Table 34. MULTISAR's contribution to the implementation of recovery actions identified in the Sprague's Pipit Conservation Management Plan (ASRD 2010c).

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
3.1. Inventory and monitoring.	• All Sprague's pipit observations are documented and entered into the FWMIS database.	• Submitted more than 1600 sightings to the FWMIS database.

Actions as Identified in the Management Plan	MULTISAR's Contribution	Measure of Success
3.2. Maintain large continuous blocks of native prairie habitat. Reclaim disturbed grasslands back to native. Promote grazing practices that create appropriate habitats. Reduce or eliminate the use of insecticides. Maintain healthy rangelands with a mosaic of habitats.	• MULTISAR is a multi-species management program that encourages appropriate management of habitat for over 17 species at risk, including the Sprague's pipit through HCSs and SARC Plans. • Currently working on restoration projects to return cultivated lands back to native grasslands.	• By March 2011, the HCS program has been active on 238,821 acres and 139,000 acres through the SARC Plan program. • MULTISAR team has maintained over 205,000 acres of native prairie habitat for use by grassland birds. • Over 80 grassland bird BMPs distributed. • Reseeded 140 acres on cropland to native grassland and witnessed the return of the Sprague's pipit on the property.
3.2.1. Timing and setback recommendations.	• Developed and distributed an Industrial Guidelines fact sheet. Fact sheet was updated in 2010-2011.	• More than 80 Industrial Guidelines have been distributed.
3.3. Education and Communication	• Developed and distributed grassland bird BMP fact sheet.	• More than 80 grassland bird BMP fact sheets have been distributed to landowners throughout the GNR.

6.11.1 Sprague's Pipit Summary

The MULTISAR project goals and objectives are closely aligned to many of the key action items identified in the Sprague's Pipit Management Plan. MULTISAR is a valuable tool in achieving action objectives of the recovery plan; in particular the objectives pertaining to inventory, maintenance of native prairie habitat, promotion of appropriate grazing practices, and multi-species conservation on the prairie. The MULTISAR project should continue to be used as a key tool in delivering the objectives of the Sprague's Pipit Management Plan.

6.12 Western Blue Flag

Between 2002 and 2005, the majority of the western blueflag inventory, stewardship and educational work was completed through the Western Blueflag Project. In 2005, the Western Blueflag Project merged with MULTISAR. Today there is a monitoring

component that is addressed through the MULTISAR project. MULTISAR currently monitors 4 watering improvements, 3 reseeding projects, and 2 fencing changes completed as part of the Western Blueflag Program. In 2005, the western blueflag was downgraded under the Alberta *Wildlife Act* from a Threatened species to a Species of Special Concern. In 2009, MULTISAR funded the Western Blueflag 5 year inventory, the results of which found the current population estimate to be approximately 107,000 to 138,000 plants. MULTISAR conducted a HCS on 2 western blueflag properties in 2009 and one western blueflag property in 2010.

6.13 Additional Species

MULTISAR is also involved with several other listed species occurring in Alberta's Grassland Natural Region through the HCS and SARC Plan programs. These species include; western spiderwort, peregrine falcon, soapweed/yucca moth, small-flowered sand verbena, long-toed salamander, and the Ord's kangaroo rat. Many of these species or their suitable habitats have not been located on MULTISAR co-operator properties, primarily because they are only found in a few specific locations within the province. As these species and habitats are located, MULTISAR will provide BMPs and/or financial incentives for their protection and maintenance.

6.14 Program Summary

The MULTISAR project has successfully assisted in the implementation of many recovery and management actions for species at risk and sensitive species in the Grassland Natural Region of Alberta. MULTISAR is an important tool in education and outreach initiatives, implementation of BMPs, development of habitat improvement projects and in monitoring of SAR. Additionally, the multi-species approach of MULTISAR allows for several species recovery actions to be included in each conservation strategy, thus decreasing the cost of implementing these actions and possible conflicts between different SAR and their recovery.

Continued cooperation between Recovery Teams, the ASRD-FWD SAR Program and MULTISAR is essential to ensure the timely implementation of the necessary recovery actions for several SAR. To facilitate the process, Recovery Team leads for species occurring in the Grassland Natural Region should communicate with MULTISAR during the plan development and identify what aspects of the plan could be achieved through MULTISAR or multi-species initiatives. Multi-species initiatives may not be suitable with the recovery of all species but should be used whenever possible.

MULTISAR will continue to be a key tool in the implementation of SAR recovery plans in the Grassland Natural Region.

6.15 Literature Cited

Alberta Burrowing Owl Recovery Team. 2005. Recovery plan for Burrowing owl in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No.6. Edmonton, AB. 24 pp.

Alberta Ferruginous Hawk Recovery Team. 2009. Alberta Ferruginous Hawk Recovery Plan 2009-2014. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Recovery Plan No. 17, Edmonton, AB. 44 pp.

Alberta Northern Leopard Frog Recovery Team. 2005. Alberta Northern Leopard Frog Recovery Plan, 2005-210. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No.7. Edmonton, AB. 26 pp.

Alberta Sage Grouse Recovery Action Group. 2005. Alberta Greater Sage-Grouse Recovery Plan. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 8. Edmonton, AB. 33 pp.

Alberta Soapweed and Yucca Moth Recovery Team. 2006. Draft Recovery plan for soapweed and yucca moth in Alberta, 206-2011. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 11. Edmonton, AB. 21 pp.

Alberta Sustainable Resource Development. 2010a. Harlequin Duck Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.4. Edmonton, AB. 17 pp.

Alberta Sustainable Resource Development. 2010b. Long-billed Curlew Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.3. Edmonton, AB. 7 pp.

Alberta Sustainable Resource Development. 2010c. Sprague's Pipit Conservation Management Plan 2010-2015. Alberta Sustainable Resource Development. Species at Risk Conservation Management Plan No.2. Edmonton, AB. 11 pp.

Alberta Swift Fox Recovery Team. 2007. Alberta Swift Fox Recovery Plan 2006-2011. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 14. Edmonton, AB. 23 pp.

Alberta Western Silvery Minnow Recovery Team. 2007. Draft Alberta Western Silvery Minnow Recovery Plan, 2007-2012. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 16. Edmonton, AB. 49 pp.

Canada Western Blueflag Maintenance/Recovery Team. 2002, Maintenance and Recovery Plan for Western Blue Flag (*Iris missouriensis*) in Canada. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 1. Edmonton, AB. 18 pp.

Endangered Species Conservation Committee. 2004a. Short-horned Lizard Initial Conservation Action Statement. Recommended to the Minister of Sustainable Resource Development.

Endangered Species Conservation Committee. 2004b. St. Mary's Sculpin Initial Conservation Action Statement. Recommended to the Minister of Sustainable Resource Development.

Endangered Species Conservation Committee. 2004c. Stonecat Initial Conservation Action Statement. Recommended to the Minister of Sustainable Resource Development.

7.0 FUTURE DIRECTION: 2011-2012

Kristen Rumbolt, Prairie Conservation Forum, Lethbridge, Alberta

In 2011-2012, MULTISAR will continue to work to achieve its goals and objectives in its three components:

Within the Education, Outreach and Awareness component, MULTISAR plans to:

- Increase its capacity to deliver its Education, Outreach and Awareness Program though collaboration with other groups and through contracted services.
- Distribute the *At Home on the Range* guide and produce and distribute the biannual *Grassland Gazette* newsletter.
- Assist with organizing and delivering annual events targeted at landholders, such as the Southern Alberta Grazing School for Women and *Holding the Reins*.
- Carry out outreach strategy for priority areas in the Grassland Natural Region.
- Deliver videoconferencing presentations on native grasslands to rural communities in partnership with the Prairie Conservation Forum.
- Deliver presentations to landowners, the public and other interest groups on topics including native grassland, species at risk, habitat stewardship and the MULTISAR project.
- Set up the MULTISAR display at various agricultural or environmental events.
- Increase media exposure through interviews, and articles in newspapers, newsletters or magazines.
- Post stories, news and events on <multisar.ca> and keep information up-to-date.

Within the Habitat Conservation component in 2011-2012 MULTISAR plans to:

- Develop Habitat Conservation Strategies (HCSs) on five properties (17,500 acres) in the MULTISAR core area.
- Assist MULTISAR cooperators with implementing recommended habitat enhancements on HCS lands.
- Seek new, interested landholders for the HCS program in priority species at risk areas.
- Seek new interested landholders in the Grassland Natural Region (GNR) and complete Species at Risk Conservation (SARC) Plans for 20-25 properties (50,000 acres).
- Continue to track landholder perceptions and awareness of species at risk through questionnaires during HCSs and SARC Plans.

Within the Research and Monitoring component in 2011-2012, MULTISAR plans to:

- Continue to monitor enhancement projects to determine if desired effects are occurring with rangelands and wildlife habitat.
- Implement the first evaluation project by returning to a property whose HCS was completed in 2006 to conduct a subset of wildlife, range and riparian surveys,

compare results with the previously collected data and assess if the HCS is achieving its goals and objectives for the ranch.

- Continue to participate in the monitoring of species at risk and keystone species in the Grassland Natural Region by participating in the provincial Ferruginous Hawk annual trend survey and surveys for other species as time and capacity allow.
- Explore the potential of partnering with a graduate student to examine the relationship between range health and the presence/absence of selected wildlife species using data collected by MULTISAR through its HCS surveys.
- Seek to standardize and centralize all its databases, inventory protocols and documents at a central location that is secure and accessible by all MULTISAR staff within the three main partnering organizations: ASRD, ACA and PCF.

APPENDIX A. Letter of Intent

LETTER OF INTENT TO PARTICIPATE IN A MULTISAR HABITAT CONSERVATION STRATEGY

Ranch:_____ Size (acres):_____ Home quarter: 1/4____ Sec___ Twp___ Rge____

(see attached map of ranch)

This letter is to set forth the intended partnership between (landowner(s))
_____and the MULTISAR program (represented by Alberta Conservation Association (ACA), Alberta Sustainable Resource Development (SRD) and the Prairie Conservation Forum (PCF)) to implement a Habitat Conservation Strategy on _____ _____(ranch)

Within this partnership the following tasks will be completed by the MULTISAR program for _____ranch.

- ❑ Complete a full habitat assessment.
- ❑ Complete a full wildlife inventory.
- ❑ Results of inventories will be put in the Alberta Government's Fish and Wildlife Management Information System (FWMIS) with appropriate buffers for Species at Risk.
- ❑ Provide information on habitat requirements of Species at Risk.
- ❑ Provide species historical information for the above ranch from FWMIS.
- ❑ Participate as a member of a Habitat Conservation Strategy team to develop a Habitat Conservation strategy for the above ranch.
- ❑ Assist with the implementation of any habitat improvements as outlined in the Habitat Conservation Strategy (pending funding availability).
- ❑ Assist in the developments of small improvement projects depending on funding.
- ❑ Sign a habitat improvement agreement outlining the roles and responsibilities of each partner prior to the onset of completing improvements.
- ❑ Sign a Stewardship Commitment Letter, which is mutually agreeable to by all parties.

Within this partnership the following tasks will be completed by the landowner(s)_____.

- ❑ Allow MULTISAR staff and/or contractors reasonable access to the above ranch for the purposes of habitat and wildlife inventories.
- ❑ Allow MULTISAR staff and/or contractors to document any historical or archeological findings and to report them to the Historic Resources Management Branch of Alberta Culture and Community Spirit.
- ❑ Participate as a member of a Habitat Conservation Strategy team to develop a Habitat Conservation Strategy for the above ranch.
- ❑ Within the framework of the Habitat Conservation Strategy team, assist in the implementation of the Habitat Conservation Strategy.
- ❑ Assist with the implementation of any habitat improvements based on the needs of the Conservation Strategy (funding availability).
- ❑ Work with the MULTISAR team on small improvements, which show measurable benefits to species at risk.
- ❑ Sign a habitat improvement agreement outlining the roles and responsibilities of each partner prior to the onset of improvements.
- ❑ Follow recommendation outlined in the Habitat Conservation Strategy.
- ❑ Display recognition sign at a visible site.
- ❑ Allow the project to be used as a demonstration site.
- ❑ Sign a Stewardship Commitment Letter which is mutually agreeable to by all parties.
- ❑ Allow reasonable public access requests.

Landowner_____ Date:_____

SRD Fish & Wildlife_____ Date:_____

SRD Lands_____ Date_____

ACA_____ Date:_____

PCF_____ Date:_____

Government of Alberta

Alberta Conservation Association
Conservation Through Collaboration

APPENDIX B. Stewardship Commitment Letter

Stewardship Commitment

The (Ranch) MULTISAR Plan represents a collaborative effort involving the landowner/lessee, Alberta Conservation Association, Alberta Sustainable Resource Development, and the Prairie Conservation Forum. The plan uses detailed wildlife and range evaluations to provide a multi-species management plan for application at the full ranch level (private and public land). Range and wildlife priorities have been determined for individual pastures. MULTISAR Beneficial Management Practices were used to develop specific management recommendations for priority management species and their habitats.

This MULTISAR Plan provides the rancher with information and guidance to incorporate species at risk into the ranching operation. It provides resource management agencies with the information needed to effectively manage for wildlife and range in an important part of their jurisdiction. The MULTISAR Plan provides its three partners, Alberta Sustainable Resource Development, Alberta Conservation Association and the Prairie Conservation Forum, with the baseline information needed for ongoing monitoring. This monitoring is important in determining the success of the MULTISAR Plan in achieving habitat goals.

A MULTISAR plan is the culmination of a voluntary cooperative process involving several key partners (landholder, government agencies, and conservation partners). A landholder (owner or lessee) who has a MULTISAR Plan has enjoyed the benefit of personal consultation sessions with resource experts, has received detailed range and wildlife information regarding his ranch and has participated in decision-making towards management of crown land resources on his land.

This Stewardship Commitment is the final stage in the MULTISAR process. It is a statement of commitment to implement the MULTISAR Plan for five years. It represents a joint declaration of confidence that this MULTISAR Plan will be beneficial to all parties. It ratifies the need for ongoing consultation, including annual meetings, and a commitment towards adaptive management to ensure the plan remains effective. It endorses a 5-year review to revise and renew the (Ranch) MULTISAR Plan.

STEWARDSHIP COMMITMENT STATEMENT

The signatories agree to implement the MULTISAR Plan on the private and public lands of the (Ranch) for 5 years from _____ to _____.

Representative of the Ranch:

_____ **Date:** _____

Representative of Alberta Conservation Association:

_____ **Date:** _____

Representative of Alberta Sustainable Resource Development:

_____ **Date:** _____

Representative of the Prairie Conservation Forum:

_____ **Date:** _____

APPENDIX C. SARC Plan Landholder Questionnaire

Ranch:

Landholders:

Location of homestead (inc. UTMs):

Year:

Observers:

In office prep work (please attached all prelim work to forms):

- ☐ HSI/MCV check
- ☐ FWMIS search
- ☐ Range Benchmark site
- ☐ GIS map
- ☐ Air photo
- ☐ Communication with range agrologist *Contact before assessment if any leased land*
- ☐ Review of SAR recovery plans
- ☐ Other_____

Suggested report date and meeting:

Contact Information:

Phone Number:

Would you like our newsletter twice a year? If yes, electronic or hardcopy?

Electronic - Email Address:

Hardcopy - Mailing Address:

Section 1: History, Land Base and Usage

1. How long have you owned/operated this ranch? (If inherited how long has family owned ranch)?

2. What is the total land base (*i.e.*, acres) of your operation?
    a) # Deeded:
    b) # Leased:

3. What acres do the following contribute to the land base of your operation?
    i. Native prairie
    ii. Seeded pasture
    iii. Hayland (and dates of harvest)
    iv. Cropland

4. Can you explain the details of how you graze?
(e.g. continuous vs. rotational, approx. time/season of use, how you decide to move cows, etc.)

5. Have you ever had a range or riparian health assessment completed on any of your land? If so, by whom?

Yes – private land Yes – public land No

6. Do you currently have any wildlife issues on your land?

7. Are there any short or long-term projects you plan on completing on your ranch (e.g. add watering sites, fencing, etc.).

Section 2: Wildlife and Species at Risk

1. Do you feel that it is possible to run a profitable operation while providing suitable habitat for wildlife? Y N unsure

2. Do you feel that wildlife is beneficial to your operation? Y N unsure
Please explain your opinions.

3. Do you feel that programs like MULTISAR may be useful in assisting you with maintaining suitable habitat for wildlife? Y N unsure

4. a) Do you feel that your land is important for providing habitat for species at risk and/or other wildlife? Y N unsure

b) Do you know of any species at risk on your land? Y N unsure
If so, which ones?

5. Do you feel that species at risk should be protected by law? Y N unsure

6. Have you heard of federal and provincial legislation such as the Species At Risk Act (SARA) and the Alberta Wildlife Act? Y N

7. Do you feel this legislation has an impact on your operation? Y N unsure
If so, is the impact positive or negative?

8. Do you currently make adjustments for wildlife in your operation?
If yes, please give examples. Y N

9. a) Would you consider making changes (or additional changes) to your operation in order to enhance habitat for wildlife? Y N maybe

b) If no, are there any particular reasons?

10. What does (or would) motivate you to consider making changes to your operation in order to enhance habitat for wildlife?

11. Do you practice any of the following:

Keeping your native prairie (not plow)	Y	N	n/a
Rotational grazing	Y	N	n/a
Resting pastures	Y	N	n/a
Delaying haying until after wildlife has nested (after July 15th)	Y	N	n/a
Using flushing bars	Y	N	n/a
Seeding fall seeded crops	Y	N	n/a
Using zero or minimal tillage	Y	N	n/a
Maintaining shelterbelts and natural trees	Y	N	n/a
Limiting chemical use around water bodies	Y	N	n/a
Leaving vegetative buffer around wetlands when haying/cultivating	Y	N	n/a
Not draining wetlands	Y	N	n/a
Limiting grazing around wetlands	Y	N	n/a
Removing invasive alien weeds	Y	N	n/a
Minimizing environmental disturbance from industry	Y	N	n/a

12. Are you willing to share wildlife sightings on your ranch with MULTISAR?
Y N

Section 3. Future Plans and Direction

1. Do you currently have a long-term plan for your ranch (e.g. plan to sell, expand operations, etc.)?

2. Can we contact you annually to follow up on the report? Y N

Section 4: Ranch Tour and Map

On the map provided please draw pastures, pasture names, fence lines, stock watering sites, and corral placement, areas of historical importance, etc.

How did you learn about MULTISAR? How about SARC Plans?

APPENDIX D. 2010-2011 SARC Plan Participant Questionnaire Summary

Landholder Knowledge and Attitudes Towards Wildlife and Species At Risk

Percent of Landholders* (%)	Response to MULTISAR SARC Plan Questionnaire
74	SAR beneficial to operation; 21% said that they were unsure as to how or if SAR benefited their operation; 5% said they were not beneficial
95	Their land is important for SAR habitat
63	SAR should be protected by law
95	Aware of SAR legislation
11	Legislation detriment to themselves; 21% say benefit, 68% not sure
58	Currently make adjustments for SAR
63	Willing to make changes in management if doesn't affect their bottom line; 32 said maybe and 5% said no
74	Have some idea of SAR habitat they may be able to provide

*Questionnaire Results based on 19 questionnaires.

Beneficial Management Practices Currently Used by Landowners Prior to the Completion of a SARC Plan

Percent of Landholders (%)	Beneficial Management Practice
100	Maintaining native prairie
95	Rotational grazing if appropriate
26	Fencing off natural water bodies for part of the season when vulnerable
32	Delaying field work with machinery until after wildlife have nested
95	Not disturbing nesting sites, burrows, etc. when occupied
11	Using flushing bars
84	Maintaining patchy areas on the range
5	Seeding fall seeded crops
90	Maintaining shelterbelts and natural trees
79	Limiting chemical use around water bodies or leaving buffer zones
100	Removing exotic weeds
58	Limiting environmental disturbance from oil and gas development
79	Restoring/Not draining wetlands
47	Limiting grazing around wetlands
95	Resting pastures after use to restore forage
68	Keeping land under permanent cover
53	Avoid planting invasive tame grasses next to native range
53	Using zero or minimal tillage

Motivating Factors for Landholders to Consider Species At Risk On Their Land

Percent of Landholders (%)	Motivating Factors
74	Personal pride in being steward
42	Recognition of being a steward
47	Financial benefits
68	More sustainable operation
74	Doing my part for the future

APPENDIX E. List of Acronyms

ACA	Alberta Conservation Association
AFGA	Alberta Fish and Game Association
AGRASID	Agricultural Region of Alberta Soil Inventory Database
APA	Adopt-a-Plant
ASRD – F&W	Alberta Sustainable Resource Development - Fish and Wildlife
ASRD - Lands	Alberta Sustainable Resource Development - Lands
AU	Animal Unit
AUM	Animal Unit Month
BMP	Beneficial Management Practice
ESCC	Endangered Species Conservation Committee
ESSR	Ecologically Sustainable Stocking Rate
FWMIS	Fish and Wildlife Management Information System
GIS	Geographic Information System
GNR	Grassland Natural Region
GPS	Global Positioning System
GVI	Grassland Vegetation Inventory
HCS	Habitat Conservation Strategy
HSI	Habitat Suitability Index
ICAS	Initial Conservation Action Plan
MAC	Management Advisory Committee
MCV	Multi-Species Conservation Value
MLA	Member of the Legislative Assembly
MRWCC	Milk River Watershed Council Canada
NCC	Nature Conservancy of Canada
OGC	Operation Grassland Community
OWC	Oldman Watershed Council
PCF	Prairie Conservation Forum
RANA	Researching Amphibian Numbers in Alberta
RSF	Resource Selection Function
SAGSW	Southern Alberta Grazing School for Women
SAR	Species at Risk
SARC Plan	Species at Risk Conservation Plan
VOR	Visual Obstruction Reading

For a list of additional reports in the Alberta Fish and Wildlife Division-Species at Risk Report Series please go to our website.

http://srd.alberta.ca/BioDiversityStewardship/SpeciesAtRisk/ProgramReports.aspx